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LIVES
OF
EMINENT NATURALISTS.



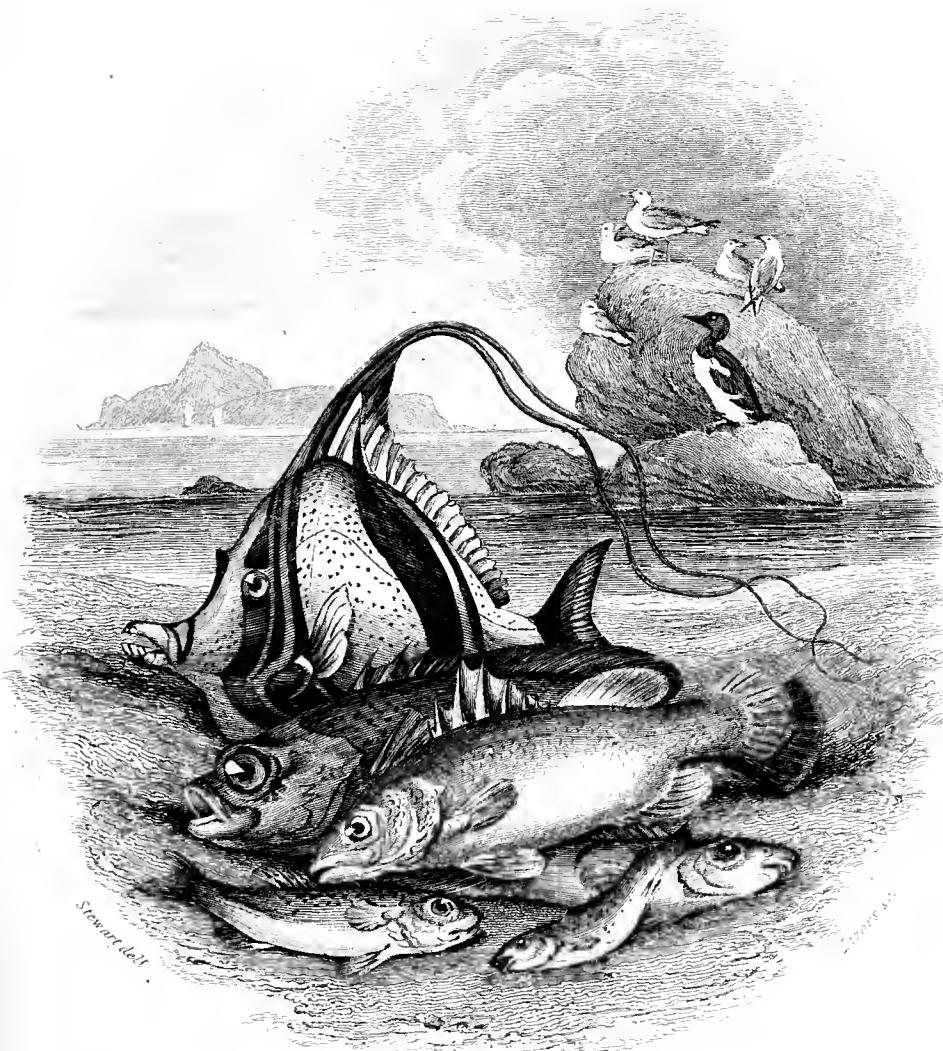




BRUCE

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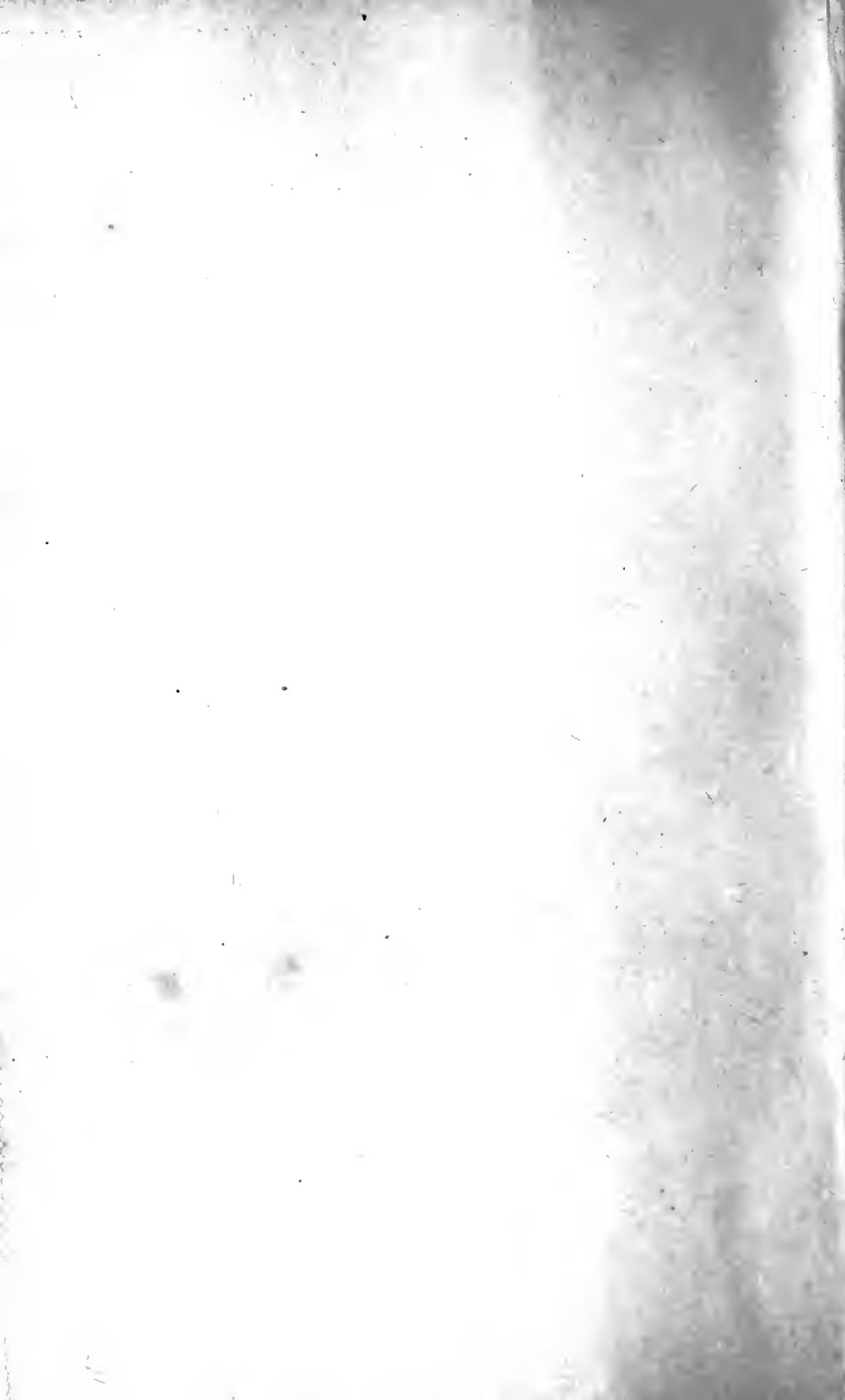
LIVES
OF
EMINENT NATURALISTS
WITH
Engraved Portraits.



EDINBURGH.

W. H. LIZARS.

LONDON, SAMUEL HIGHLEY 32. FLEET STREET,
DUBLIN, W. CURRY JUNR & C°



L I V E S
OF
EMINENT NATURALISTS,

WITH
ENGRAVED PORTRAITS
ACCOMPANYING EACH.

CONTENTS.

BRUCE.	{	SIBBALD.
BEWICK.		LE VAILLANT.
LACEPEDE.		HALLAR.
LAMARK.		ALDROVANDI.

EDINBURGH:
W. H. LIZARS, 3, ST. JAMES' SQUARE;
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FROM THE PUBLISHER.

WE have been solicited so repeatedly for separate copies of the MEMOIRS and PORTRAITS of the celebrated Persons which have been Published in the

NATURALIST'S LIBRARY,

and the internal interest contained in these Biographical Sketches themselves is such, as to induce us to bring out in a separate form, and distinct from that Work, the present Volume of the

LIVES OF EMINENT NATURALISTS,

WITH ENGRAVED PORTRAITS TO EACH.

No department of literature combines more instruction than that which forms the subject-matter of the present little Volume, and there is probably no class of men more amiable and interesting whose lives could have been selected: we remark, that

Biography is at once interesting and instructive, because its perusal teaches how to imitate good, and to reject evil propensities, while it lets us into the secret springs of action which determine and regulate moral character. On these accounts, if our present Publication be well received, we shall proceed to bring out, in a similar form, the other Memoirs which have accompanied the Volumes of the Work just mentioned, and which have been, and continue to be, received with such marked favour by the Public at large.

EDINBURGH,
3, St. James' Square, 1841. }

MEMOIR OF BRUCE.

ALTHOUGH the claims of Bruce, the African Traveller, as a benefactor to science, belong rather to Geography than Natural History, yet from the importance of his discoveries as enlarging the means of human knowledge, and opening up an unexplored region to future adventurers in the same path, his name well deserves a place in the catalogue of distinguished men who have contributed to the advancement of Natural Science. The interesting countries through which he penetrated have been repeatedly visited by Europeans since his time ; but with him rests the merit of having first excited that thirst for information respecting their antiquities, manners, and productions, which has led so many enterprising travellers to the same fountain.

Abyssinia, the most prominent theatre of Bruce's discoveries, had then aroused no spirit of inquiry in Great Britain ; and it was nearly as little known to the inhabitants of this part of the world, even up to the middle of the last century, as it was in the days of Herodotus and Strabo. From the Mosaic record we learn that the Jews were acquainted with

“Ethiopia above Egypt,” which corresponds to the Nubia and Abyssinia of modern geography. The knowledge of these districts possessed by the Greeks and Romans was chiefly traditional, derived from the merchants of the Red Sea, who imported into Egypt the rich products and manufactures of Arabia, Persia, and India. But their poets and philosophers universally regarded that mysterious region as the cradle of those arts which, at a later period, covered the kingdom of the Pharaohs with so many wonderful monuments and stupendous edifices; as also of those religious rites, which, after being slightly modified by the priests of Thebes, were adopted by the predecessors of Homer and Virgil as the basis of their mythology.

From the days of the Ptolemies, or about the beginning of the Christian era, more than a thousand years passed away, during which no European acquired any knowledge of that remote land, or set a foot within its borders. Its history is shrouded in utter darkness; and we can only conjecture that the Mohammedan conquerors, after subduing the Greek province of Egypt, or more probably some of the barbarous native hordes, more potent than the rest, may have established their dominion in the desert, and extinguished in their civil wars those lights of civilization which once illumined the fabled regions of ancient Meroe. The only gleams of intelligence that break occasionally through that long night of historical silence, are the feeble rays of uncertain information afforded by the early Christian writers,

who laboured to connect the ecclesiastical affairs of that country with those of the patriarchate of Alexandria.

It was not until the epoch when the Portuguese, attracted at once by their love of gold and their zeal for making converts to the Romish faith, penetrated into Eastern Africa, that any degree of knowledge was obtained respecting its political condition, or its natural productions. The grand object of their maritime as well as their missionary exertions, was, as is well known, to reach the territory of that celebrated and mysterious personage called *Prester John*, whom they believed to be the king of the Christians and emperor of Ethiopia. Their pious curiosity was at length rewarded by the discovery, or the supposed discovery, that the dominion of this second Melchizedek was no other than Abyssinia. The error indeed was afterwards detected, but it had the effect of stimulating their apostolical zeal, and obtaining from eye-witnesses a more enlarged and accurate account of the country than had then reached Europe. The travels of the Jesuits in the sixteenth century, while labouring to propagate their faith among the natives, are detailed in the Collection compiled by Father Balthazzar Tellez, whose curious volume may be regarded as the first attempt to compose a general history of Ethiopia.

One of these missionaries, Peter Paez, who set out in 1589, is generally alleged to have visited the sources of the Nile; at least his description of them, as quoted by Kircher, strongly resembles that after-

wards given by Bruce. Jerome Lobo, another of these missionaries, who resided there nine years, and whose History was translated by Dr. Samuel Johnson, also describes the “coy fountains” of that celebrated river, as if he had seen them ; but whether he actually visited them, or merely wrote from information communicated by others, has never been clearly ascertained. The names of Ludolf and Geddes are familiar as having written on Abyssinia ; but since the journey of Poncet (1698), who visited Sennaar, Gondar, and other Abyssinian towns, a long interval had elapsed, during which the name of the country was almost forgotten ; and no traveller seemed inclined to revive it, until the romantic spirit of Bruce turned his attention to those neglected regions, in the hope of tracing the hidden fountains of the Nile ; a problem which had excited, without rewarding, the curiosity of men of science from the earliest ages.

JAMES BRUCE, of Kinnaird, was descended of an ancient Scottish family which claims kindred with the royal hero of that name who restored the independence of his country on the field of Bannockburn. He was born at Kinnaird House in Stirlingshire, on the 14th of December, 1730. His mother was a daughter of Graham of Airth, in the vicinity of his own residence, who was then Dean of the Faculty of Advocates, and Judge of the High Court of Admiralty in Scotland ; a man of distinguished abilities, and respected for his public and private

virtues. Young Bruce had the misfortune to lose his mother in the third year of his age ; his father married a second wife, by whom he had two daughters and six sons, some of whom embraced a military life and died in the service of their country.

In his childhood, Bruce possessed nothing of that daring spirit and athletic constitution which afterwards carried him safely through so many perilous adventures. The insidious disorder that hurried his amiable mother to a premature grave, seemed to have marked him out as another victim ; but the phthisical symptoms of infancy gradually disappeared, and at eight years of age his father sent him to London, where it was intended he should receive a liberal education, suitable to his future prospects in life, as the heir apparent of the family estate. He was entrusted to the friendly care of his uncle, Counsellor Hamilton, under whose superintendence he remained until 1742, when he was removed to Harrow School, then conducted by Dr. Cox. At this famous seminary he prosecuted his studies with unusual diligence, and had the reputation of being one of the most promising boys that the master ever had under his charge.

Bruce quitted that institution on the 8th of May, 1746 ; and during the four years of his residence there, he not only acquired a competent share of classical learning, but gained the esteem of many individuals who became his attached friends ever afterwards. He had now reached the age of sixteen, but he by no means enjoyed confirmed health or a

robust constitution. His tall stature and his general appearance indicated that he had grown faster than his strength ; however, as it was considered necessary that he should follow some profession, Mr. Hamilton was requested to converse with him on that important subject. His own preference was to prosecute the study of divinity and become a clergyman, as being more in unison with the gravity of his character and habits.

Meantime, after leaving Harrow, he was sent for a short time to another academy, where, besides Latin and Greek, he studied French, arithmetic, and geography. His father having expressed a wish that he should abandon the church, he at once complied, and consented to turn his attention to the law, with the view of becoming an advocate at the Scottish bar.

Having greatly improved in his health, he returned in May, 1747, to his native place, and devoted the following autumn to the invigorating sports of the field, which gave him a decided taste for that sort of amusement. In the winter he repaired to Edinburgh, where he attended the professors of Civil and Scotch law ; but a short trial soon convinced him that his mind was not adapted for these pursuits. He had no relish for dry technicalities, the use or importance of which he could not comprehend ; and after hanging his bewildered head for a season over the pages of Heineccius, while his fancy was roaming among the poetic flowers of Metastasio and Ariosto, he was obliged

from the impaired state of his health to return home, by the advice of his physician, in quest of fresh air and exercise. This simple prescription restored his constitution; and it was now determined that he should abandon the legal profession, as its drudgeries were beyond his strength, and not likely after all to ensure success.

For several years Bruce remained idle, without aiming at any particular line of life; India was at last suggested as a field suited to his ardent imagination; but as he was considerably above the age for receiving a writership from the Company, he resolved to petition the Court of Directors for leave to settle under its patronage as a free trader. In July, 1753, he left Scotland for London, with a view to carry this plan into execution. On his arrival he met with the most cordial reception from his former friends and acquaintances; and while waiting in suspense for the permission of the Directors, a new object took possession of his heart, which speedily obliterated all thoughts of foreign travel in pursuit of wealth or business. This was an elegant and accomplished young lady, named Adriana Allan, daughter of a widow, whose husband, an eminent wine-merchant, had raised himself to opulence by his steadiness and integrity. Bruce had been introduced to her by one of his companions; her engaging manners and affectionate disposition soon won his love; their regard was mutual; and as the mother's consent was easily obtained, the marriage took place (Feb. 3, 1754),

and the prospect of riches in India was exchanged for a share in the wine-trade. Our traveller knew nothing at all about the business, but as it was an additional bond of connexion with the fair object of his choice, he embarked in it with all the ardour of professional enthusiasm. The dealings of the company were extensive, and he now seemed fixed for life in an employment which promised to secure him both fortune and happiness.

But the morning of his hopes was soon overclouded. His young wife inherited a consumptive habit, which made it necessary for her to seek a healthier clime than the thick noxious atmosphere of London. Finding the waters of Bristol unavailing, she undertook a journey to the south of France, but expired on reaching Paris, exhausted with disease and fatigue. The poignant grief of Bruce was exasperated almost to frenzy by the refusal of the intolerant Catholic priests to allow her Christian burial. To obtain this rite required the influence of the British ambassador, Lord Albemarle ; and at the dead hour of midnight, the disconsolate husband bore her remains to a grave, for which he was indebted to the humanity of that nobleman. The distraction of his mind, with the want of food and rest, threw him into a fever at Boulogne, from which he recovered so far as to be able to return to London. His usual avocation was resumed, but the tie that endeared it to him was broken, and it no longer afforded him either interest or amusement. Resigning the chief management to his copartner,

he endeavoured to soothe his sorrows with study and travel.

For two years he devoted himself to the acquisition of the Spanish and Portuguese languages, and also made considerable progress in several styles of drawing. It fortunately happened that the concern in which he was engaged required a regular and constant intercourse with those countries, so that his desire to visit the continent coincided with the ordinary routine of the business.

After having made a short visit to the islands of Guernsey and Alderney, he sailed in the month of July for the continent, and spent the remainder of the year in Portugal and Spain. From Corunna, where he landed, he proceeded to Ferrol, and thence to Oporto and Lisbon. His professed object was to be present at the vintage of that season, but his journals showed that he had paid more attention to the manners and customs of the people. From Portugal Bruce entered Spain, passed through Toledo, and made an excursion over the mountains into the province of new Castille. About the middle of November he reached Madrid, having traversed the districts of Cordova and Seville. His intimate knowledge of the Spanish language was of great service to him, in enabling him to appreciate more narrowly the habits and condition of society.

The traces of Oriental manners visible in the south, the ruinous palaces of the Kaliphs, and the romantic tales of Moorish chivalry, turned his attention to the unexplored collections of Arabic manu-

scripts deposited in the monastery of St. Laurence and the famous library of the Escurial at Madrid. Having a slight acquaintance with that tongue, he might perhaps have brought to light some of their hidden treasures ; although little could be expected from Bruce after the laborious researches of Michael Casiri, who was at that very time engaged in compiling his celebrated work the *Bibliotheca Arabico-Hispana Escurialensis*, in which he has classed and given copious extracts from no fewer than one thousand eight hundred and fifty-one Arabic manuscripts. But the jealousy of the Spanish government prevented him from gaining admission into that vast sepulchre of oriental learning, except upon a condition with which his unsettled imagination could not comply, that of attaching himself to the Spanish court.

After sojourning there for a few months, he departed for Pampeluna, the capital of Navarre, where he arrived on Christmas day, 1757, on his way to France. Crossing the Pyrenees, he reached Bourdeaux, where he tarried for some time, delighted with the cheerful vivacity of French society. From that city he traversed the country eastward to Strasburg, and then following the course of the Rhine to its confluence with the Maine, he visited Frankfort. Returning northward, he passed through Cologne to Brussels, having a strong desire to visit the Austrian Netherlands. On the second day after his arrival he innocently inveigled himself in a duel with a stranger ; and having wounded his antago-

nist, he was obliged to make the best of his way to Holland. Thence he proceeded to Hanover, where he had the fortune to witness the battle of Creveld (June 23, 1758), the first engagement he had ever seen.

Yielding to the romantic ideas of military glory with which that spirit-stirring scene had inspired him, he resolved to quit the peaceful walks of life and the insipid avocations of trade, and become a soldier. His imagination pictured to him the exploits and the fame of his illustrious ancestors ; and he might probably have embarked as a military adventurer in foreign service, had he not received a letter at Rotterdam informing him of his father's death. This intelligence, and the consequent succession to the family estate, altered his intentions, and obliged him to return without delay to England. Having gradually disengaged himself from his partnership in the wine-trade, he made preparations for returning to Scotland, the value of his property in the mean time having been considerably raised by the large demands of the Carron iron-company on his coal-mines.

A circumstance at this time happened which formed the pivot on which the future destiny of Bruce was to turn. During his short stay at Ferrol, in Gallicia, he had been led, in consequence of a rumour of war between Britain and Spain, to consider that place as the most advantageous point for the British squadron to attack with a view to invade the country. This project Bruce now communi-

cated to Mr. Pitt, with whom he had the honour of conversing on the subject. That able minister seemed inclined to adopt his plan; but before it could be carried into execution, and when Bruce had received orders to wait upon him on the subject, Mr. Pitt resigned his office. The scheme, however, was not allowed to drop: it had been laid before the king, and was highly recommended by Lord Halifax. The Earl of Egremont and Mr. Grenville had several meetings with Bruce to concert the expedition, which was to be entrusted to Lord Howe. But the Portuguese ambassador interfered, and the idea was suddenly abandoned.

After these repeated disappointments, Bruce retired to Scotland; but he was soon again called to London by Lord Halifax, who suggested to him the congenial task of exploring the coasts of Barbary and the magnificent remains of Moorish architecture, which had been already partially visited by the learned Dr. Shaw. The discovery of the sources of the Nile was likewise made the subject of conversation; and it was from this incident that Bruce conceived the design of solving that great geographical problem which, as he expresses himself, had baffled the researches of all travellers for the last two thousand years. Fortune seemed to smile on this arduous undertaking, for the consulship of Algiers having become vacant by the death of Mr. Ford, Bruce was induced to accept the office as affording additional convenience for making his proposed scientific excursion into the interior. Before

his departure he had the honour of being presented to his majesty George III. who conversed with him on the nature of his expedition, and requested him to make accurate drawings of the ruins he might discover in the course of his travels. To improve his taste and his knowledge of these matters, it was arranged that he should travel through France and Italy, with a view to observe and study the remains of Roman antiquity in the latter country.

Bruce was overjoyed at the delightful prospect now opened before him ; he sailed from England in June, 1762, and arrived at Rome in the month of August. The paintings, statues, ruins, and other curiosities which he examined during his visits to Naples, Florence, and Bologna, have already been seen and described by thousands of travellers ; it is only necessary therefore to remark, that on all the particulars he made very minute observations, which indicated the extent of his knowledge as well as the correctness of his taste and judgment. Having engaged an artist named Luigi Balugani, and availed himself of every opportunity to improve his own skill in drawing, as also of the Arabic language, he sailed from Leghorn on board the Montreal man-of-war, and arrived at Algiers on the 15th of March, 1763. With the view of observing the transit of Venus, which would be visible at that place, he had provided himself with a complete apparatus of instruments, in the selection of which he had been assisted by his friends Admiral Campbell and Mr. Russell.

The despatches which Bruce sent home in his capacity of British consul (and which are preserved in the Colonial Office), gave a curious and correct picture of the customs of the Algerines, and of the barbarous government under which they lived. It was usual for every new consul to make large presents on entering upon his official employment; the rapacity of the Dey, which extended to his lowest menials, led him to render their situation as disagreeable as possible, in order that he might enrich himself by compelling the Christian states frequently to change their diplomatic servants. The consequence was, that our traveller soon got involved in disputes with the Dey, who violated without scruple both the persons and properties of such English subjects as fell into his hands. When Bruce remonstrated, he was instantly told by his Highness that "he cared neither for the King of England nor his consul." He then ventured, in a letter to his patron, Lord Halifax, to recommend "forcible measures, as the only way of maintaining the dignity of his country at Algiers." This bold advice evidently placed his own life in jeopardy, and he began at last to apprehend that he might fall a victim "to these lawless butchers."

Fresh quarrels having arisen on the subject of certain English passports which the French governor of Minorca had seized when he took that island, and sold to Spaniards, Neapolitans, and other enemies of the Barbary regencies, with a view to involve us in a war with the Algerines, Bruce courageously

opposed the cruel resolution of the Dey to order every ship carrying a *passavant*, or *written* certificate, to be captured, concluding that as they differed from the old *printed* form they must have been forgeries. The result of this determined conduct was, that the British consul had his dragoman taken from him, and was commanded to quit the country in three days; and had not the savage passion of the Dey been somewhat abated by the opportune arrival of proper admiralty passes, the discoverer of the sources of the Nile might have fallen a sacrifice to the caprice of an ignorant barbarian. The dangerous post from which Bruce had so narrowly escaped, was immediately filled by a successor, who overstepped the bounds of conciliation so far as to allow the Algerine tyrant to impose a tax on British vessels, which he had no right to levy.

The time that elapsed between Bruce's dismissal and his obtaining an answer from Lord Halifax to his despatch, was assiduously devoted to study in making him familiar with every thing that was requisite for his intended journey. From Father Christopher, a Greek priest of Cyprus, who had formed his acquaintance at Algiers, he acquired a thorough knowledge of the Romaic or modern Greek, which was of great importance to him in Abyssinia. From Mr. Bell, the king's surgeon, and from his friend Dr. Russell, physician to the British factory at Aleppo, he obtained some professional information on the compounding and administering

of medicines, which afterwards served as a valuable passport in all the countries which he visited.

No sooner was he relieved from his tedious residence of two years and a quarter at Algiers, than he prepared for his departure ; and accordingly, he sailed on the 25th of August, 1765, for Tunis and Tripoli, being furnished with recommendatory letters from the Dey to the Bey of both these regencies. Proceeding along the coast, he visited Bona, the ancient Aphrodisium ; on anchoring at Biserta, he paid a visit to Utica, not so much (as he says) in the expectation of finding any thing remarkable, as out of respect to the memory of Cato. He found the city a heap of rubbish, but the trenches and approaches of the ancient besiegers were still tolerably perfect. After doubling Cape Carthage, and rowing along the bay, he saw several buildings and columns still standing under water, by which it appears that Old Carthage had owed part of its destruction to the sea ; and hence may be inferred the absurdity of any attempt to represent the site of that renowned city on paper.

The inhabitants of Tunis he found to be more civilized than the Algerines, and living under a milder government. Having delivered his letters to the Bey, he obtained permission to visit the country in any direction he might please ; and about the middle of September, he made an excursion into the interior, accompanied by his draughtsman, ten servants, and a small escort of foot soldiers. From

the Bey's wife he received a present of a two-wheeled covered cart, resembling those commonly used by bakers, and this served as a conveyance for his quadrant and telescope, protecting them sufficiently from the weather.

At Tucca he found a Corinthian pillar of Parian marble, and the ruins of a temple, among which he remained fifteen days, making various interesting drawings, which, it appears, have never yet been given to the world. At Hydra (the ancient Thunodrunum) he met with a tribe of Arabs who were immensely rich, but remarkable for being exempted from paying tribute either to Tunis or Algiers, on the frontiers of which kingdom they dwelt. The pretence for this immunity was rather singular. Being obliged by the institutions of their founder to live upon lion's flesh, they enjoyed this indulgence from these governments, because they devoured the natural enemies of the state. Bruce partook of this extraordinary fare, and mentions an anecdote of Dr. Shaw, who made the same statement; but finding it ridiculed at the university of Oxford as an inversion of the order of nature, since the more general practice is for lions to eat men, he did not venture to publish the fact in his travels, but contented himself with merely printing it in the appendix.

From Hydra Bruce proceeded to Spaitla, and was occupied eight days in measuring and drawing its extensive and elegant ruins. To this place he returned a second time after making a short visit to Tunis, and spent five days more in revising and

correcting his sketches. During these journeys, his health was good, notwithstanding the heat of the climate ; the only annoyance to which he was exposed was an attack of a tribe of plundering Arabs. From Tunis he set out for Tripoli, travelling along the coast ; the only incidents of importance that occurred on the route were his falling in with the Haj or pilgrim caravan on its way to Mecca in Arabia, and his being assailed by a party of Arab horsemen, who were repulsed with considerable difficulty.

At Tripoli he was hospitably received by the British consul, a countryman of his own, the Honourable Mr. Fraser of Lovat ; but in consequence of some misunderstanding between the Pasha and Mr. Fraser, our traveller found it absolutely necessary for him to return to Tunis, until the differences with the Barbary States were adjusted. In August 1766, he again set out from Tunis, crossing the desart by Sfax and Gerba, and arrived in safety at Tripoli. He then despatched an English servant to Smyrna with his books, drawings, and supernumerary instruments, to await his arrival.

Crossing the gulf of Sydra (the Syrtis Major), Bruce visited Bengazi, but he found the whole district in a state of lawless disorder, owing to the mismanagement of the governor, who was brother to the Bey of Tripoli. Quitting this dreadful scene, and travelling over the greater part of the Pentapolis, he visited the ruins of Orsinoe ; but discovering nothing of interest there, nor at Barca, he proceeded

to Ras Sem, the petrified city, where the Arabs pretend that men and horses, women churning, little children, dogs, cats, and mice, were to be seen in a state of petrifaction. It is needless to say that Bruce discovered none of these marvels, and found them all to be fables. Approaching the sea-coast he came to Ptolemeta, the ancient Ptolemais, the walls and gates of which he found still entire, and covered with an immense number of Greek inscriptions.

The turbulent state of the country, the appearance of the plague, and the plundering of the great pilgrim caravan, induced our traveller to fly at once from that inhospitable coast, to save his life and the information he had so laboriously acquired. Embarking with his little party on board a Greek junk belonging to Lampedosa, a small island near Crete, he resolved to proceed on his journey; but the vessel being badly appointed, and overcrowded with starved passengers, he discovered, when too late, that he only escaped one species of danger to encounter another. The captain was ignorant of his duty, and being overtaken with a storm, the ship struck upon a sunk rock at the entrance of the harbour of Bengazi; a few of the men perished by attempting to save themselves in a boat; Bruce was an expert swimmer, and reached the shore in a state of great exhaustion; for a considerable time he lay insensible, and was at length roused from his stupor by a blow on the head from the lance of an Arab, a party of whom had come to plunder the vessel.

From the fashion of his dress, which had been

purchased at Algiers, the Arabs mistook him for a Turk ; and after many kicks and curses, they stript their defenceless and half-dead victim, leaving him in a state of nudity on the sand. Suspecting the true cause of his misusage (the Arabs detest the Turks), he contrived to let the robbers know that he was a poor Christian physician, a dervish going about doing good, and wrecked while on his way to Greece to get bread. This information procured him better treatment ; the Sheik or chief of the tribe ordered him a plentiful supper, where he had the happiness to meet his attendants. Camels were then brought, and the whole party proceeded to Bengazi ; here Bruce wrote to the Sheik, entreating him to endeavour to fish up his cases and instruments from the wreck ; but this was not effected, though a handsome reward was offered, and he lost by this importune accident a sextant, telescope, time-piece, a small camera obscura, several guns, pistols, drawings, with many of his notes and observations.

After being detained at Bengazi about two months, Bruce obtained a passage in a small French sloop, the master of which he had known at Algiers ; and bidding farewell to Africa, he landed at Crete, where in consequence of his exertion in the waves, he was seized with an obstinate ague, and for some days lay dangerously ill. From Crete he sailed to Rhodes, where he had the pleasure to find his books and instruments. Being desirous to view some magnificent ruins on the coast of Caramania in

Asia Minor, he proceeded to Castelrosso ; but his fever increasing, he was reluctantly compelled to abandon his object, and taking again to sea, he touched at Cyprus, and then landed at Beirut near Sidon, on the coast of Phœnicia, in June, 1767.

His health and constitution had suffered severely, still he resolved to persevere ; but before undertaking his bold attempt to reach the fountain of the Nile, he was anxious to visit Syria, and add the ruins of Palmyra to those of Africa. Proceeding by Latikea and Antioch to Aleppo, he was again seized with his relentless malady ; and had it not been for the kind attention of M. Belville, a French merchant, and the professional skill of Dr. Russell, physician to the British Factory in that city, it is probable Bruce's travels would have ended in the capital of Northern Syria. As soon as his health would permit, he departed for Palmyra, which he reached, after making a narrow escape from the treachery of the inhabitants in fording the Orontes. The view of these stupendous ruins made a strong impression on his imagination, as surpassing any thing he had ever seen. With the assistance of Balugani, he proceeded to sketch the magnificent scene before him, dividing the whole into six angular views ; and after finishing thirteen large drawings, he and his party quitted that enchanting place, and travelled almost a hundred and thirty miles to Baalbec.

Having taken a number of drawings of these gigantic ruins, he returned by way of Tyre to the

hospitable mansion of M. Clerambaut at Sidon, much fatigued, but gratified exceedingly with what he had seen. On his arrival, he found a supply of mathematical and astronomical instruments, which had been sent to him from Europe, to make up for the loss he had sustained at Bengazi : his telescopes had been forwarded to him from London ; a time-piece and a stop-watch from Paris ; and a quadrant from Louis XV., who had learned the story of his misfortune from the Count de Buffon. Equally flattered and delighted with this support, he resolved to delay no longer his voyage to Egypt ; and on the 15th of June, 1768, three years after quitting Algiers, he sailed from Sidon for Alexandria, which he did not reach until the beginning of July, having been detained for some time at Cyprus, as it was not known there whether the plague had ceased in Egypt.

Bruce carried with him letters of recommendation to the mercantile house of Julian and Bertram, and to them he imparted his design of pursuing his journey into Abyssinia ; but as the government of Cairo had always been jealous of visitors to that country, he was obliged to pretend that his destination was to India.

When his cases of instruments were opened at the customhouse at Alexandria, they naturally suggested to Risk, the secretary of Ali Bey, that their owner must be versed in the science of astrology. His supposed knowledge of the stars, and ability to foretell contingent events, threatened to become

rather a dangerous accomplishment. In a few days he was desired to repair to the convent of St. George, where he met with his old friend, Father Christopher, who had lived with him at Algiers ; and from that venerable patriarch he received much useful intelligence respecting Abyssinia, where several of the highest offices in the kingdom, he told him, were held by Greeks, with whom he corresponded. The fame of his astrological science led the Bey to request an interview, that he might ascertain the result of the war then pending between Russia and Turkey. Bruce answered with true sybilline obscurity, which amazed the Bey, and he was dismissed with an offer of coffee, sweetmeats, and protection.

His knowledge of physic likewise attracted the notice of Ali, who again sent for him to prescribe a cure for a fit of sickness with which he had been seized after dinner. Bruce recommended an emetic ; a remedy which, being contrary to the religion as well as the stomach of a Mussulman, was declined, until the experiment was made on a young monk, " who was absolutely turned inside out before them," that the Bey might have the satisfaction to see how the medicine operated.

Anxious to advance on his journey, our traveller procured recommendatory letters to the governor of Syene and Upper Egypt, also to the Bey of Suez, the Sheriff of Mecca, the Naib of Massuah (then part of Abyssinia), and to the King of Sennaar. Thus provided, he bade adieu to Cairo, and embarking with his little party on the 12th of De-

cember, he proceeded up the Nile in 'a canja, which was to carry him to Furshoot, the residence of Haman, Sheik of Upper Egypt. As he passed along, he was gratified with a sight of the pyramids, and surveyed with delight the picturesque scenery of that ancient country. The situation of Memphis, the old capital of Egypt, excited his attention, and he entered keenly into the conflicting opinions respecting its position, as maintained by Shaw, Pococke, Niebuhr, and others; but it is needless for us to touch upon that controversy, which will likely remain for ever a topic of dispute, as the reader perhaps knows that not a vestige of Memphis has existed for many centuries.

The ruinous villages and Arab encampments on the margin of the river, gave life and variety to the scene. Palm trees studded the green narrow valley, and behind them rose the barren hills of a whitish sandy colour, and completely destitute of all vegetation. At Rhoda, Bruce saw the magnificent ruins of the ancient city Antinous, built by Adrian. In some parts of the valley the ground was sown from the foot of the mountains to the waters edge, the grain being merely thrown, after the river has subsided, upon the mud, without any preparation of the plough. In the progress of his voyage, Bruce visited Girgé, Dendera, Furshoot, Thebes, Luxor, Karnac, and other places memorable for their stupendous ruins, which have since his time been depicted and described by a hundred subsequent travellers; of many of these he took sketches, at the

hazard of being murdered by the Arab robbers ; and in one of the sepulchres at Thebes, he drew two ancient harps, which were preserved among his papers, and given to Mr. Burney to illustrate his History of Music.

Two days after the canja had sailed from Luxor, it reached Sheik Amner, the encampment of the Arab tribe that extended from Cosseir on the Red Sea far into the desert which Bruce had to cross. He thought it politic to cultivate their friendship. The traveller and his party were well received by the old Sheik, called Nimmer (or the Tiger), who was very ill, and lying in the corner of his tent on a carpet. Bruce prescribed soap pills, which afforded him great relief ; after which the grateful veteran solemnly offered him his protection as far as Cosseir. By the advice of the “ Royal Tiger,” to whom for the first time he unfolded his real design of penetrating into Abyssinia, he was induced to take the route from Kenné to Cosseir ; thence to cross the Red Sea to Jidda in Arabia ; and from that port to sail direct for Massuah on the coast of Sennaar. Accordingly, on the 16th of February, 1769, he set out from Kenné, retracing his course down the Nile ; having previously visited the celebrated cataracts, which are about six miles from Assuan. Much to his surprise, he found that vessels could sail up the rapids, the river there being not half a mile broad, but divided into a number of small channels.

The caravan, which he joined at Kenné, crossed

the dreary desert at a funereal pace ; nothing was to be seen but burning sands, or barren hills of a brown calcined colour, like the cinders on the side of Vesuvius. There was no water, brackish or sweet ; nor the traces of any living creature ; neither serpent nor lizard, antelope nor ostrich. In four days they reached Cosseir, “ a small mud village defended by a square fort with a few pieces of cannon.” Here one of his attendants, Abd-el-gin, had nearly fallen a victim to the fury of the Arabs ; but by the address and intrepidity of Bruce, he was recovered from their hands when almost strangled by means of a hair rope passed round his neck.

While at this place, Bruce determined to attempt a survey of the Red Sea, which was then but imperfectly known to European navigators. Having provided a vessel for the purpose, he embarked with his party, and proceeded along the Egyptian coast as far as the entrance to the gulf of Suez. The rais or captain had the reputation of being a saint, but his absurdities were too ridiculous to impose upon any body save the ignorant Arabs. To calm the fears of his passengers, he gravely assured Bruce, that any rock which stood in his way would either jump aside at their approach, or else turn soft like a sponge. His miraculous virtues, however, were not proof against storms, for after making a short excursion to Jibel Zumrud, the emerald mines described by Pliny, a violent tempest of wind and rain obliged them to return to Cosseir ; the rais

being completely overcome with terror, and unable to manage the ship, kept muttering something about the mercy and merits of Sidi Ali.

On the 5th of April, Bruce again embarked to continue his survey, and proceeding up the coast four days, he crossed the gulf of Suez to Tor, a small straggling village in the region of Mount Sinai. On the 11th he again sailed; advancing down the Arabian shore, he touched at Yembo, and thence continued his voyage to Jidda, the most important place (except Mocha) on the eastern coast of the Red Sea.

From the effects of sun and weather, and the attacks of his Bengazi ague, Bruce's jaded appearance and shabby dress made him resemble a native Arab or Turk rather than an Englishman. Even his own countryman at Jidda, Captain Thornhill of the Bengal Merchant, could not at first recognize him as a European; and imagining him to be some poor starved adventurer, sick and in distress, he ordered his cook to give him a hearty meal of broth and mutton; Bruce despatched his dinner, and immediately fell asleep upon a mat in the open court yard, before another apartment could be provided for him. While enjoying this welcome repose, his luggage arrived at the customhouse; and the Vizier being exceedingly curious to know what so many large boxes contained, he ordered them to be forced open at the hinges. The magnificence of the contents, when contrasted with the humble guise of the owner, excited his utmost astonishment.

The first thing he beheld was the firman of the Grand Signior, splendidly written and titled, the inscription being powdered with gold dust, and wrapped up in green taffeta. Next appeared a white satin bag, addressed to the Khan of Tartary ! Then a green and gold bag, with letters directed to the Sheriff of Mecca ! Then a crimson satin bag, containing others for Metical Aga, his chief minister, sword-bearer, and favourite ! Lastly, appeared a letter from Ali Bey of Cairo to the Vizier himself, written with all the haughty pomp of a prince to a slave, and concluding by saying, that if any accident should happen to Bruce through his neglect, the offence should be punished at the gates of the Holy City. The Vizier's curiosity at the sight of so much mysterious grandeur, was soon changed into feelings of very painful alarm ; he ordered the mighty stranger's boxes to be nailed up immediately, and upbraiding the servants for not telling him to whom they belonged, he mounted his horse, and instantly rode down to the English factory, inquiring every where for the English nobleman, whom nobody had seen.

Bruce was still lying on his mat in the court, which was now filled with a crowd of people ; and on the question being put to him, by one of the officers, where his master was ? " In heaven" he replied, yawning from his sleep ; but soon recovering his scattered senses, he rose and introduced himself to the Vizier, as the owner of the tremendous luggage. On being informed of his plans, arrangements were

instantly made for getting him the strongest possible recommendations to the Naib or governor of Massuah, to the sovereign of Abyssinia, and the king of Sennaar. All the English at Jidda were particularly attentive to his wishes, and it was agreed that a native Abyssinian, called Mahomet Gibberti, should accompany him, to be an eye-witness of the treatment he should receive.

While these preparations were getting ready, Bruce prosecuted his survey of the Red Sea. Leaving Jidda on the 8th of July, he landed at Gonfodah, and thence continued his voyage to Gibel Raban, a small island in the Straits of Babelmandeb, where he drank from a jar of brandy to the health of his Britannic majesty. Having determined the latitude and longitude of the straits, and other places on the adjacent coast, he sailed northward (8th of August) and arrived at Loheia, an Arabian town directly opposite Massuah, and the port of Abyssinia. Here he was joined by his new guide, Mahomet Gibberti, who brought the firman for the Naib, and letters for Ras Michael, governor of the great province of Tigré. Quitting Loheia on the 3d of September, they passed Gibbel Teir, a volcanic isle, about midway from either shore; on the 14th they reached Dahalac, the largest island in the Red Sea, being thirty-seven miles in length and eighteen in breadth; and on the 19th, the vessel came to anchor in the harbour of Massuah.

During his circumnavigation of the Arabian Gulf, Bruce made a great number of notes and observa-

tions respecting the soundings, currents, bearings of the different islands, and geographical position of the principal points and harbours. His remarks were chiefly nautical, but his collections of marine productions, and his observations on the natural history of the Red Sea were very extensive, although not detailed at length in his travels, or even in his private journals.

After a long series of disasters and adventures, this enterprising traveller had at last reached the land where lay the far-famed object of his researches, "the coy fountains of the Nile." As it is to this point chiefly that our attention in the present biographical sketch is directed, we shall pass with very few remarks those parts of his narrative that refer to the ancient history, as well as the civil and ecclesiastical state of the country.

The kingdom of Habbesh (the old name of Abyssinia) is reckoned in superficial extent about the size of Great Britain. That sequestered region, intersected with ranges or chains of high mountains and low cultivated valleys, is traversed by hot poisonous winds, and deserts of moving sand. The ferocious manners of the people are more dangerous to the traveller than the fervid climate they inhabit. On the south it is surrounded by the various tribes of the Galla nations; the Shangalla (the ancient Cushites or Ethiopians) lie on the northern boundary, forming, as it were, a string to the bow of the Galla territory, which almost encompasses the kingdom in the opposite direction.

Except its river and its religion, Abyssinia seems to possess little that can excite the interest of Europe, or connect it with the civilized world. Alternately deluged with rain, or burnt up by a vertical sun, it presents at different seasons a picture of luxuriant vegetation or cheerless solitude. Saturated with heat and moisture, the black fat earth is impregnated with swarms of insects, which burst into existence, and overshadow the land with flying armies of desolation. To avoid this living pestilence, even the elephant and rhinoceros plunge into marshes, that the mud, when dried on their skin, may form a shield impenetrable to their attacks. The inhabitants, with their cattle, repair to the deserts, or take refuge in their cities, which are generally perched on the tops of mountains. The country of the Shangalla tribes, being low and flat, is chiefly exposed to this annoyance.

This rude people migrate in tents, and during the rainy season they live in holes, excavated in the soft sandy rocks. They are Pagans, and worship the moon, stars, trees, and serpents. They are early trained to archery, and practice polygamy, as they reckon a great number of children the best defence against their enemies. One of the savage amusements of the Abyssinians is to hunt these ill-fated tribes in the woods, a sort of horrid recreation which is customary on the accession of every new king to the throne. As the Shangalla men are active, and quite familiar with the intricacies of the forests, their merciless pursuers enjoy, what in

the language of the turf would be called excellent sport, although the chase always ends in slaughter ; all the grown up persons, men and women, being killed, and the children carried off and sold for slaves to the Turks, who profess to admire the Ethiopians because in summer they have a cold skin !

The Galla are a shepherd race, and exceedingly numerous ; their complexion is brown or black, with long hair of the same colour. They are of a warlike disposition, and manage their horses with remarkable dexterity. Their habits and appetites are filthy to a degree rare even in barbarians. Even what may be termed the elegancies of their dress, is of a description that must appear somewhat offensive to our refined notions of personal decoration. Round their bodies, by way of ornament, they wind the entrails of oxen, which also serve as necklaces, and hang in clustering festoons down their breast or back. Their whole person is besmeared with grease, which is poured so copiously on their heads, that it melts, and is continually dropping on the goat-skin that covers their shoulders. They devour their meat raw ; and when thirsty, they open a vein in the neck of a cow, and regale themselves with a draught of warm blood. They practise polygamy, and in their religion are partly Heathens and partly Mahometans. Bruce describes them as intelligent and active, but extremely dirty and ignorant.

The king of Abyssinia, at the time when Bruce resided at Massuah, was named Tecla Haimanout,

and had succeeded to the throne in 1769. Since the death of M. Roule, who had proceeded to that court as French ambassador in 1704, no European had visited these secluded regions, and the land of Ethiopia seemed almost blotted out from the map of the world. The immense distance, the climate, the dreary deserts, and the barbarous habits of the surrounding tribes, were of themselves enough to deter any ordinary traveller from undertaking so dangerous a journey. The two great links, commerce and religion, which had so long connected Abyssinia with Europe, were broken when the Romish missionaries were interrupted in their labours of conversion, and when the trade with India forsook its ancient route by the Red Sea, and directed its course round the Cape of Good Hope. The arrival of Bruce, therefore, marked a new era in our historical knowledge of that country. His narrative contains a detailed account (occupying nearly a thousand pages of his volumes) of the reigns of several kings, with minute descriptions of their persons, their petty feuds and dissensions, their wars with the Moors, the Jews, the Galla, and their savage treatment of the Shangalla tribes; but these we leave to be studied in the travels, as not being essentially connected with the biography of the traveller.

Massuah, which Bruce reached after a passage of seventeen days across the Arabian Gulf, is a small island near the town of Arkeeko, and was once a place of great commerce, possessing a share of the

India trade, but it had long fallen into decay. At the period of his arrival the place was in a disturbed state, in consequence of the Naib having monopolized the customs of the port, and refused to surrender any portion of them, either to the Pasha of Jidda or the king of Abyssinia. This dispute had nearly proved fatal to Bruce, and deliberations were held whether he should not be put to death and his property divided among them; but the advice of Achmet, nephew to the Naib, prevailed; and it was agreed that the fate of "the English prince" should be placed at his disposal. With this personage Bruce contrived to ingratiate himself, chiefly through the influence of his sincere friend Mahomet Gibberti, who had been sent by the Pasha of Jidda to demand payment of the tribute; and also to request Ras Michael, prime minister of Abyssinia and governor of the great province of Tigré, to lend his aid in compelling the refractory Naib of Massuah to perform his engagement.

The good will of Achmet was easily secured by the compliment of a brace of pistols, and by the adroit representation of Gibberti, who had impressed his mind with magnificent ideas of Bruce's importance, and of the amazing wealth and power of his nation. But it proved a more difficult task to conciliate the old Naib, who was as remarkable for his malicious cruelty as for his insatiable avarice. On his return from Arkeeko, Bruce had an interview with him, to deliver his firman and letters of safety. It soon became evident that the design of this func-

tionary was first to rob and then to assassinate Bruce. He desired him to prepare three rich presents, to be delivered to him on three separate days ; and when this request was denied, he threatened that unless he paid him down three hundred ounces of gold, “he would confine him in a dungeon, without light, air, or meat, until his bones came through his skin.”

At length Bruce succeeded in over-awing this brutal savage (whose naked slaves were ready at a word to plunge their knives into the “Christian dog”), by threatening him with a broadside from an English man-of-war, and telling him that he had already sent forward his despatches to Ras Michael and the king of Abyssinia, who would most certainly punish him if he offered any interruption to his journey. The old Naib found himself thus completely outwitted ; he dreaded the terrible name of Ras Michael, who made and unmade kings and governors at pleasure ; and after some other ineffectual attempts to intimidate Bruce, by pretending that an insurrection had broken out in the country through which he had to pass, he allowed him to proceed. Meantime letters had arrived from Ras Michael, expressing surprise why “the physician sent by the king from Arabia” was detained so long, and commanding the Naib to furnish him with the necessary supplies, and forward him without loss of time.

Every thing was speedily arranged and ready for his departure. The faithful Achmet still appre-

hending mischievous designs on the part of his uncle, promised to accompany him part of the way, and take upon himself his safe convoy. On the 15th of November, after a detention of nearly two months, Bruce left Arkeeko, thankful at having escaped from a series of troubles, vexations, and perils beyond what he had ever experienced, and prosecuted his route to Gondar, the capital of Abyssinia. The road lay through deep ravines, dreary plains, and valleys thickly covered with acacia trees, in which the travellers encountered violent storms of thunder, and were exposed to imminent danger from elephants, hyænas, and other beasts of prey.

The most striking object was the lofty mountain of Tarenta, which rose above all the others, towering to the clouds, and sometimes completely enveloped in mist and darkness. Over this they passed with much difficulty, their clothes being torn, and their hands and feet lacerated with climbing up the rocks. Descending the other side, they found the natives busy with their harvest, the cows and bullocks being employed in treading out the corn. The first town they reached was Dixan, which was built on the pinnacle of a hill resembling a sugar-loaf. Leaving this place on the 25th of November, they entered the province of Tigré, the boundary of which they found to be marked by an immense daroo tree, seven and a half feet in diameter, with the head spreading in proportion. At this spot Bruce got quit of that part of his retinue belonging to the Naib of Massuah, whose presence had been a source

of constant alarm to him ; then they were joined by several Moors, from one of whom he purchased a black horse, which not only contributed to his ease and comfort, but more than once was the means of saving his life. Mounting his steed, he paraded the animal in every direction, firing from his back at full gallop in the Arab fashion ; all of which had its own weight, by giving him in the minds of his rude attendants a superiority which induced them to obey and place confidence in his orders.

The soil of the country was very unequal, sometimes rich and overgrown with wild oats, so high as to cover men and horses ; at other places, rocky, uneven, and covered with thick brushwood. They crossed two rivers, the Bazelat and Angueah, being the first running water they had seen since passing Tarenta. The whole district of Tigré, which they had now entered, is full of mountains, which are not so remarkable for their height as their curious and grotesque forms ; some being flat and square, some resembling prisms or obelisks, and others like pyramids pitched on their vertex with the base uppermost. One of these pinnacles, called Danio, served as a prison to the royal family of Abyssinia, in ancient times, during the massacres under a queen named Judith, scarcely less celebrated in Ethiopian history than the famous princess who visited Solomon at Jerusalem.

The town of Adowa, at that time considered as the capital of Tigré, stood at the foot of the hill of

the same name, and consisted of about three hundred houses, each dwelling being enclosed by hedges and trees. The residence of Ras Michael was on the top of a hill, and resembled a prison rather than a palace. In it and the adjoining building, more than three hundred people were confined in irons: the object of this cruel treatment was to extort money from them; many of them had been there twenty years, and were kept in cages like wild beasts. The houses were of rough stone, cemented with mud instead of mortar: the roofs were cone-shaped, to resist the heavy rains, and thatched with reeds. The inhabitants have three harvests annually, according to the different kinds of crop; wheat is reaped in November, barley in February, and teff, or vetches, in April. They are much annoyed with rats and field-mice, which they destroy by setting fire to the straw.

Bruce was anxious to proceed without delay to Gondar, and the tranquil state of political events seemed to offer him a favourable opportunity. Ras Michael had found the old king, Hatre Hannes, whom he had raised to that dignity by assassinating his predecessor, too feeble and sluggish for his duties; and having despatched him by poisoning his breakfast, he placed his son, Tecla Haimanout, on the throne. The people, wearied of these revolutions, had subsided into a temporary calm. Of this interval Bruce determined to avail himself, and on the 17th of January, 1770, he and his party quitted Adowa, and on the following day they reached the

plain, where stood the celebrated ruins of Axum, supposed to have been the ancient capital of Abyssinia. The remains of art and architecture are very extensive, consisting entirely of pillars, fragments of temples, and other public buildings. Among the statues is one of Ptolemy Euergetes, sitting with his crown on, and his feet resting on a large oblong slab of free-stone like a hearth.

It was in the neighbourhood of Axum that Bruce saw the natives eat raw beef-steaks, warm from the cow's buttock, and he has minutely described the way in which the exploit was performed. He and his attendants had fallen in with a party of travellers who were driving a cow, which they supposed had been stolen ; on a sudden, they tripped up the heels of the poor animal, so that it fell to the ground. One of them then sat across her neck, holding down her head by the horns ; another twisted the halter about her fore-feet ; while a third, who had a knife in his hand, got astride upon her belly before her hind legs, and in a twinkling cut out two pieces, thicker and longer than our ordinary beef-steaks, from the higher part of the rump. "How it was done," says Bruce, "I cannot positively say, because, judging the cow was to be killed from the moment I saw the knife drawn, I was not anxious to view that catastrophe, which was by no means an object of curiosity. Whatever way it was done, it surely was adroitly, and the pieces were spread upon the outside of one of their shields."

When the operation was ended, the skin, which

had been merely flayed off and left entire, was flapped down over the wound, and fastened by means of two skewers or pins; the part was then covered with a cataplasm of clay, after which the animal was forced to rise and proceed, until her hungry drivers required another meal. This fact was one of the very extraordinary events in which Bruce's veracity was called in question; the story was laughed at in his own country, and considered too absurd to be true; subsequent observations, however, have since that time amply verified his statements.

When the travellers reached Siré, they found the peace of that province disturbed, in consequence of the insurrection of Fasil, a man of low birth, who had been made governor of Damot. Ras Michael had marched against him, and succeeded in dispersing his army, after killing ten thousand of his men. The whole country through which they passed was strewn with ruined villages, the wretched monuments of the governor's cruelty. No other event of importance occurred to interrupt them; and after traversing for a month an extensive and mountainous region, the party arrived on the 14th of February (ninety-five days after leaving Massuah) at Gondar.

The situation of that metropolis is described as very romantic. It stands upon the flat summit of a hill of considerable height; the houses were chiefly of clay, with the usual conical roofs. The king's palace was a square building, flanked by towers,

and surrounded with a stone wall thirty feet high, and broad enough at the top for a parapet and a path. The whole population of the town was at that time estimated at about ten thousand families. On the opposite side of the river Angrab was a large suburb consisting of about a thousand houses, occupied by the Moors or Mahometans.

On reaching the capital, Bruce found that the king and Ras Michael, as well as the principal Greeks, to all of whom he had brought letters of introduction, were not then returned from their military expedition. In this dilemma, and knowing nobody to whom he could address himself, a Moor intimately acquainted with their chief, to whom he had brought a letter from his friend Janni, conducted him to a house in the Moorish town, supplied him with food, and promised to screen him from danger until he could procure protection from the government. Here he was soon discovered by Ayto Aylo, the queen's chamberlain, who had already heard of his renown as a physician. This functionary told Bruce that Welled Hawaryat, son of Ras Michael, had arrived from the camp, ill of a fever which was supposed to be the small-pox, and that the Iteghe, or queen-mother, had sent to request his attendance at her palace at Koscam, to consult about the patient.

In obedience to the royal mandate, he repaired to her majesty's residence; but the sick youth had received so much benefit from a charmed potion administered by a saint, consisting of certain mystic

characters written on a tin plate, and then washed off and given him to drink, that the consultation was deferred till next day. Scarcely had he returned home, however, when a second message informed him that Welled was so ill that his mother, the beautiful Ozoro Esther (wife of old Ras Michael), and the Iteghe, begged him to come again and visit him, with some others who were sick.

On entering the palace, he found a deputation of monks had arrived to perform a miraculous cure, by laying upon the patient a cross and a picture of the Virgin Mary, sent by three renowned saints from Waldubba. In consequence of this prescription, Bruce's skill was not put in requisition ; but he was introduced to the queen-mother, with whom he held a long conversation about the Roman Catholic religion and the healing virtues of miracles. Next afternoon he was informed that Welled Hawaryat and some others that were sick had died, an event which destroyed all faith in the medical reputation of the saints.

As the contagion had spread itself all over Gondar, Bruce was requested to take up his abode in the palace, where the whole children and grandchildren belonging to the royal family were placed under his charge. Accordingly, being provided with an Abyssinian dress, with his hair cut round, curled, and perfumed in the true Amharic fashion, he proceeded to his destination, and entered at once upon the functions of his new profession. His mode of treating the disorder, by the admission of fresh air

and the use of fumigation, so contrary to the suffocating system and the cramming with raw beef as practised in Abyssinia, was attended with the happiest results. His patients were at length considered out of danger, and by way of fee he received the present of a house in the immediate vicinity of the palace, where he continued to reside, agreeably to the most positive command of Ras Michael, not to leave his charge until further orders. The leisure thus afforded him he employed in mounting his instruments, and making some astronomical and meteorological observations.

On the 8th of March, Bruce proceeded to Azazo to meet the Ras, who had arrived with the troops at that place. That extraordinary person, feared and hated by every individual in Abyssinia, was dressed in a coarse dirty cloth, wrapped about him like a blanket, with a sort of table-cloth folded about his head. He was lean, old, and lame, with sore eyes, and sat stooping upon a favourite mule ; but he was too much occupied with military business to enter into discourse with the stranger. He had just gained a victory over the Galla tribes, and the first horrid proof of it which he exhibited was causing the eyes of twelve of their chiefs, whom he had taken prisoners, to be pulled out, and the unfortunate sufferers to be turned sightless into the desert, to be devoured at night by the hyænas.

Next day, the army, about 30,000 strong, marched into the town in triumph ; the Ras took the command of the troops at Tigré ; he was bareheaded,

with long hair, white as snow. A black velvet cloak with a silver fringe hung over his shoulders down his back ; and a bag at his right stirrup held a silver wand, about five and a half feet long. Behind him marched all the soldiers who had slain an enemy and taken the spoils ; with these horrid trophies their lances and firelocks were ornamented, as also with small shreds of scarlet cloth, one piece for every man he had killed.

The most remarkable among these savage warriors was the door-keeper of the Ras, who had been so successful in his inhuman trade, that his whole lance and javelin, horse and person, were covered with patches of red cloth. The head-dress of the governors of provinces was curious, consisting of a broad fillet round the head, tied behind, and in the middle of the forehead projected a horn, or conical piece of silver, about four inches long, resembling in shape a common candle extinguisher. These badges of honour were only worn at reviews or parades after victory. The king himself had a fillet of white muslin, fastened in the same manner, and hanging about two feet down his back. Around him were his officers of state, the young nobility who had no command, and after these the household troops ; lastly came the executioner of the camp with his attendants, one of whom, as a warning to evil doers, carried upon a pole the stuffed skin of a human being, which he hung up on a branch of the tree appropriated to public executions.

Bruce had continued to visit his patients regularly.

at Koscain, where he was cordially received by the Iteghe: but he had been completely neglected by all except the Moors, who were grateful for the attention he had paid to their children. In the evening of the 13th, the Moorish chief, Negade Ras Mahomet, informed him that it was in contemplation to appoint him Palambaras, or master of the king's horse, a very distinguished office both for rank and revenue. Bruce remonstrated against all preferment, as tending to defeat the great object of his visit, and requested that his friends would merely use their utmost exertions to induce Ras Michael to provide for his safety while proceeding to explore the source of the Nile.

For this purpose it was resolved that the letters he had brought from Cairo and Jidda, setting forth the power and riches of the English nation, and the important character of the traveller, should be communicated to the king and the Ras, and a personal interview obtained with both. Old Michael received him with great dignity, cautioned him against the danger “ of wandering in solitary places to search for trees and grass, and to sit up all night alone looking at the stars of heaven ;” and told him that he was to be appointed Baalomaal to the king, and commander of the Koccob horse, that situation being one most likely to secure his personal safety and leave him at liberty to prosecute his own designs.

From the Ras he proceeded to the palace “ to kiss the ground on his new appointment.” The

king, who sat with his mouth covered according to the Abyssinian custom, put many questions to him about Jerusalem and the holy places, asked him about his own country, and whether they had the same moon and stars; and finally told him, that instead of returning home with the Greek officers who accompanied him, he was that night to enter upon his new duties, by taking charge of the door of the royal bed-chamber.

Bruce and his brother Baalomaal then hurried to supper; during the repast the wine circulated so freely, that one of them, nephew to Ras Michael, called Guebra Mascal, who was incessantly vaunting about his skill in fire-arms, got so cup-valiant that he gave our traveller a kick with his foot, calling him a Frank, and a liar for saying “that the end of a tallow candle in his gun would do more execution than an iron ball in Guebra Mascal’s.” This insult was not to be endured; Bruce, boiling with passion, seized him by the throat, threw him violently on the ground, and struck him on the face, having received in the scuffle a slight wound on the crown of the head as he wrested the drawn knife from his assailant. By the laws of Abyssinia, the lifting of a hand within the precincts of the palace is punishable with death, and in a few hours the offender was in irons; but by the interposition of Bruce, who related the whole occurrence, the Ras was prevailed upon to pardon his kinsman and overlook the whole affair. This untoward quarrel, together with the death of his draughtsman Balu-

gani, annoyed him so grievously, that he almost resolved to abandon the object of his journey, and ask permission to return by Tigré. —

The marvellous boast about the tallow candle had excited the king's curiosity so far, that he professed himself incredulous of the result until he should see the experiment tried. Bruce, who had no doubt of convincing his majesty, ordered three strong buffalo hides to be suspended against a post close in contact behind each other; and having put one half of a farthing candle into his loaded musket, he discharged the contents through all the shields with such violence, that the tallow was dashed into a thousand pieces against a stone wall, some distance beyond the targets. Shouts of applause from the crowd followed this exploit, which were redoubled when they saw the other half of the candle fired through a table of sycamore. The priests, who were his great enemies, alleged the whole was done by magic; but on the king's mind it made the most favourable and lasting impression, so that ever after he treated Bruce with the most decisive marks of confidence and friendship. This simple feat, which every school-boy can perform, raised Bruce into notice, and was long remembered in that country, where the story was told to the English traveller, Henry Salt, forty years afterwards.

As a more substantial token of court favour, Bruce was created governor of Ras el Feel, a western district adjoining the frontier of Sennaar.

Meanwhile, the rebel Fasil no sooner heard of

Ras Michael's return to Gondar, than he marched against the Agows, near the sources of the Nile, and defeated them in a bloody battle. A council was forthwith called, and although the rainy season was at hand, old Michael declared that the king's forces should immediately take the field. Bruce, who was suffering from ague and ill health, had taken up his residence at Emfras, a town eastward of the great lake Tzana ; and as the army passed close by that place on its march, he embraced the opportunity of joining it, in order to visit the neighbouring cataract of the Nile, as the troops had to cross the river before reaching the enemy's territory. After a journey of several days, they arrived at the river, which was confined between two rocks, and ran in a deep ravine with great noise and impetuous velocity. “ The cataract itself (says Bruce) was the most magnificent sight that ever I beheld. The height has been rather exaggerated, but judging from the position of long sticks and poles, at different heights of the rock from the water's edge, I may venture to say that it is nearer forty feet than any other measure. The river had been considerably increased by rains, and fell in one sheet of water, above half a mile in breadth, with a force and roaring that was truly terrible, and which stunned and made me for a time perfectly dizzy. A thick fume or haze covered the fall all around, and hung over the course of the stream, both above and below, marking its track though the water was not seen.” From the cataract Bruce returned to the

house of his Moorish friend Negade Ras Mahomet, and on the 22d of May (1770) he resumed his journey to join the king. After passing the Nile, they advanced through a flat country, where the grass was trodden down, the fields left without cattle, and every thing bore marks that the terrible Ras had gone before. An awful silence reigned around ; the houses were deserted, and every living being had fled before the march of the destroyers. For the first time Bruce felt his spirit sink at the idea of having penetrated into so remote a country, abounding with so many dangers, from which he appeared to have little chance of extricating himself. This rashness and imprudence, added to the thoughts of his friends in Scotland, greatly depressed his mind ; but these uneasy reflections were speedily dissipated by the sound of a general firing, which indicated that the army was not far distant.

The noise was not caused by any engagement, but by the soldiers amusing themselves in shooting boars, buffaloes, deer, and other wild animals that were driven from their lairs at the approach of the troops. A slight encounter with the enemy had taken place at Derdera ; those who could not escape were slain, and all sorts of wanton barbarities were committed. The expedition having thus ended, the king and Ras Michael determined to return to Gondar. On the 26th of May they re-crossed the Nile amidst much confusion, the stream being swollen with rain. Rafts were employed for transporting the women and children ; the rest swam

with their horses. Two days after the passage, the Ras engaged Fasil and routed him at Limjour; next day the rebel gave in his submission, and solemnly promised that he would never again appear in arms against the king, but hold his government faithfully under him, and pay his contributions regularly. After this declaration, Fasil was appointed governor of Damot and Maitsha.

On the 30th of May Bruce returned to Gondar, mortified at having undergone so many dangers without attaining the great object of his journey —viewing the sources of the Nile—which he had approached within fifty miles. Confidence, however, never failed him, and the reconciliation of Fasil became instrumental in accomplishing his wishes. He had been very attentive and serviceable to Fasil's servants while in the camp, especially in prescribing for his principal general, Welleta Yasous, who had a cancer on his lip; and in return he obtained a grant of the village of Geesh and the source where the Nile rises, in exchange for Tangouri near Emfras. This arrangement greatly facilitated his plans; and although the Iteghe showed much aversion to his design, she did not positively forbid the attempt; and accordingly, on the 20th of October, Bruce and his party resumed the task of exploration. His quadrant required four men, relieving each other, to carry it; and his time-keeper and telescopes employed two more. Passing the flat country of Dembea, towards the great lake Tzana, through which ran the waters of the Nile, they

came to Gorgora, an elevated peninsula running into the lake for several miles, and one of the pleasantest situations in Abyssinia. Proceeding onwards they reached Bamba, a collection of small villages in a valley, where Fasil was encamped with his army. Knowing that this chieftain had power to forward his object, Bruce obtained an interview with him in his tent, and was disappointed to find that he was disposed rather to betray, or even to destroy him, than to promote his design. He affected great surprise at the purpose of his undertaking ; told him that the Galla, through whom he had to pass, were a wild and ferocious people, and that he would not reach his destination in twelve months. Bruce, full of indignation at this treachery, remonstrated with him on his breach of faith ; and hinted, that if he did not do his duty, he might incur another visit from Ras Michael and the army. This spirited conduct had the desired effect. Fasil changed his tone ; assured him that the head of the Nile was within a day's travel with a fleet horse, and offered to send a trusty guide with him to Geesh. After making him handsome presents, and obliging the Galla chiefs to swear that they would not hurt him ; " Now go in peace (said he), you are a Galla ; this is a curse upon them and their children, their corn, grass, and cattle, if ever they lift their hand against you or yours, or do not defend you to the utmost if attacked by others." Upon this, Bruce kissed hands and took leave.

On the 31st of October he crossed the Nile once

more, near the dangerous ford which he had formerly passed with so much difficulty with the king's army. On the bank they found some of the Galla tribe, whose chief was called Jumper, to whom Bruce paid his respects. He found him at his toilette, after the fashion of his country; that is, he was rubbing melted tallow on his arms and body, and plaiting his hair with the large and small entrails of an ox, some of which hung like a necklace round his throat. Our traveller made his visit as short as possible, glad to escape the perfume of filth and carrion, which was far from being agreeable. These savages offered no injury to the strangers, but they paid the utmost deference to Fasil's horse, which the owner told Bruce, when he made him a present of it, would be a sufficient passport through the country.

Farther into the interior, and beyond the Assar river, the soil was extremely rich, and bore wild oats of a prodigious height and size. The trees were covered with flowers of every colour, and crowded with birds of uncouth forms, all of them richly adorned with every variety of plumage; few of them, however, were musical, their notes resembling the squalling noise of the jay.

It was on the 2d of November that Bruce, for the first time, obtained a distinct view of the mountains of Geeshi, the long wished-for object of his most dangerous and troublesome journey; and being now within sight of his goal, he proceeded with redoubled alacrity. The Nile was before him, and

he joyfully descended to its banks, which were ornamented on the west with high trees of the salix or willow tribe ; while on the east appeared black and thick groves, with craggy pointed rocks, and overshadowed with tall timber trees going to decay with age. The old inhabitants had a profound veneration for the river, and endeavoured to prevent the strangers from crossing, unless they took off their shoes.

Next day they journeyed through a plain covered with acacias. “ Here (says Bruce) the Nile winds more in the space of four miles, I believe, than any river in the world. It makes above a hundred turns in that distance ; and is not above twenty feet broad, nor more than a foot deep.” After coasting for some little time along the side of the valley, they began to ascend a mountain, supposed to be the *Montes Lunæ* of antiquity ; and reaching its summit about noon, they came in sight of Sacala, which joins the village of Geesh. Immediately below was seen the Nile, much diminished in size, and now only a brook that had scarcely water to turn a mill. It ran swiftly over a bottom of small stones, with hard black rock appearing amongst them ; the ground rose gently from the bank to the southward, full of small hills and eminences. Before he had reached Geesh, Bruce was told by his guide, Woldo, to look at a hillock of green sods in the midst of a marshy ground ; “ It is there (said he) that the two fountains of the Nile are to be found.”

The intelligence had an electric effect on the

mind of the traveller. “ Half undressed as I was (says he), and throwing my shoes off, I ran down the hill towards the green island of sods, which was about two hundred yards distant. The whole side of the hill was thick grown with flowers, the large bulbous roots of which, appearing above the surface, and their skins coming off on treading upon them, occasioned me two very severe falls before I reached the brink of the marsh. I, after this, came to the mound of green turf, which was in form of an altar, apparently the work of art, and I stood in rapture over the principal fountain which rises in the middle of it.

“ It is easier (continues Bruce in a strain of rapturous exultation) to guess than to describe the situation of my mind at that moment—standing on the spot which had baffled the genius, industry, and inquiry of both ancients and moderns for nearly three thousand years. Kings had attempted this discovery at the head of armies, and each expedition was distinguished from the last, only by the difference of the numbers which had perished; and agreed only in the disappointment that had uniformly and without exception followed them all. Though a mere private Briton, I triumphed here, in my own mind, over kings and their armies; and every comparison was leading nearer and nearer to presumption, when the place itself where I stood, the object of my vain-glory, suggested what depressed my short-lived triumph. I was but a few minutes arrived at the source of the Nile, through number-

less dangers and sufferings, the least of which would have overwhelmed me, but for the continual goodness and protection of Providence. I was then, however, but half through my journey, and all those dangers which I had already passed, awaited me again on my return. I found a despondency gaining ground fast upon me, and blasting the crown of laurels I had too rashly woven for myself."

The artless style of these remarks is a strong internal evidence of the authenticity of Bruce's narrative. His tone of extravagant joy is suddenly overcast with a cloud of melancholy, on reflecting how disproportionate was the object of his discovery in itself, with the time and toil it had cost him to accomplish it. The contemptible streamlet, issuing from a hillock of green sods, bore little resemblance to the vast rolling mass of waters that gave fertility to Egypt.

The transition from despondency to delight, in his present state of mental excitement, was equally rapid ; forgetting his gloomy anticipations, he drank to the health of his majesty King George III., from a large cup made of a cocoa-nut shell, still preserved among the family heir-looms at Kinnaird. Several other healths followed from the same limpid fountain, after which he tossed his cap in the air with a loud huzza, until the Agows, who had appeared on the neighbouring height, stood in silent amazement, believing that he was out of his senses, or had been bitten by a mad dog. After this scene of hilarity, which greatly amused his attendants, who could

not enter into his feelings, he retired to his tent to dream his adventures over again.

The small marsh, in which stood the hillock of green sods, was about eighty yards broad ; the altar itself was nearly three feet high and about twelve in diameter, surrounded by a wall of turf, at the foot of which there was a narrow trench to collect the water. In the middle of the hillock was a hole about three feet in diameter and six deep, filled with water, which had no ebullition or perceptible motion of any kind upon its surface. About ten feet distant, there was a second small fountain, with a wall, trench, and hole like the other. The body of water from all these, when collected in one stream, according to Bruce, " would have filled a pipe of about two inches in diameter." The latitude he fixed at $10^{\circ} 59' 25''$ north, and $36^{\circ} 55' 30''$ east longitude. The Shum, or priest of the river (Kefla Abay), an old venerable man, with a white flowing beard, and a skin buckled round his body with a belt, received the traveller with great kindness ; he gave up his house to Bruce and his attendants, and insisted upon their taking his daughters (he was the father of eighty-four children) as his housekeepers, a proposal which was readily accepted.

Bruce staid at Geesh several days, during which time he was constantly occupied in making various surveys and astronomical observations. He became exceedingly popular with the inhabitants, who were given to understand he was their new sovereign or

governor, and would pay for every thing without exacting taxes or military service.

It is scarcely necessary to inform the intelligent reader, that Bruce's discovery, after all, left the great geographical problem (the real sources of the Nile), which had occupied the attention of so many ages, and baffled the efforts of Cambyses, Alexander, and Ptolemy, still unresolved. It is well known, that in the kingdom of Nubia, about sixteen degrees north of the equator, the great river of Egypt splits into two main branches, called the Bahr el Azrek or Blue River, flowing from the eastward, and the Bahr el Abiad or White River, which takes a western course. These names they derive from the respective colour of their waters, a fact which shows that they flow through tracts of country differing entirely in the qualities of their soil. At their junction, the White River is by far the larger of the two; and for more than a league after their meeting, the waters on each side retain their peculiar colour. There can be no doubt, that this is the main artery of the Egyptian Nile. This, Bruce himself, much to his honour, admits; and conjectures, from the larger volume of water, that it must proceed from a more remote source; so remote, that it yet remains undiscovered, except in the dark floating clouds of the tropics, which give back in periodical rains those copious exhalations which they draw from the great basin of the Mediterranean.

But though this fact is allowed, it scarcely plucks a single berry from the laurels of Bruce. The

Ethiopians have always claimed for the Blue River the distinction of being the genuine branch of the Nile. It was so considered throughout all antiquity ; and we learn from a recent traveller, Burckhardt, that the Abyssinians of the present day give the name of Nile to the Bahr el Azrek. Bruce, therefore, has all the merit of resolving the grand geographical problem of his time. Whether he was the first European that visited the sources at Geesh has been disputed ; but if the Jesuit Paez saw these “ coy fountains ” before him, the world was left in all but total ignorance of the discovery. Bruce performed the task with all the dangers and disadvantages of a first adventurer ; he reached the goal which human curiosity had so long panted to attain ; and by his dauntless courage alone, he achieved in his day what Ross or Parry would have done in ours, had they succeeded in erecting the British flag on the north pole of the earth.

Having accomplished his grand object, and taken leave of the venerable Shum, Kefla Abay, Bruce left Geesh on the 10th of November, 1770, and returned to Gondar. Fasil had already departed for that capital, and his wife and sisters insisted that the traveller should marry them, it being, they said, the invariable rule of that country, that the conqueror should espouse the wives of his enemies. During Bruce’s absence, a great revolution had been effected at Gondar, the throne of Tecla Haimanout having been seized by a usurper, named Socinios, who had appointed Fasil Ras. Several desperate battles took

place between the rebels and the king's troops, which ended in the defeat of the former and the restoration of tranquillity.

The horrid barbarities which Bruce had witnessed, and the numberless executions of the rebels, whose putrid carcases, thrown on the streets to be devoured by hyænas, corrupted the atmosphere, determined him to leave that wretched country without delay. With the utmost reluctance he obtained permission of the king to depart, having received from his majesty, in consideration of his services, a gold chain, consisting of one hundred and eighty-four links. Bidding adieu to Gondar, he commenced his journey homeward, which he had resolved to complete, not by Massuah and the Red Sea, but through the deserts of Nubia to Syéne on the frontier of Egypt.

He set out, on the 26th of December, 1771, with a small escort ; and after encountering a number of adventures, and running some risk of assassination from the fierce and avaricious habits of the natives, he arrived on the 29th of April at Sennaar, the capital of Nubia. The country through which he had passed was in many parts well wooded and highly picturesque ; but the climate was almost intolerable from the heat, the thermometer standing sometimes at 120° in the shade. “ The banks of the Nile about Sennaar (Bruce says) resemble the pleasantest parts of Holland in the summer season ; but soon after, when the rains cease, and the sun exerts his utmost influence, the dora begins to ripen, the leaves to

turn yellow and rot, the lakes to putrify and swarm with vermin, all this beauty suddenly disappears. Bare, scorched Nubia returns with its poisonous winds and moving sands, glowing and ventilated with sultry blasts, which are followed by a troop of terrible attendants—epilepsies, apoplexies, fevers, agues, and dysenteries of the most obstinate and fatal character."

The city itself, which covers a prodigious space of ground, was built of clay houses one story high, and the floors of earth. Bruce having a present to deliver from the sovereign of Abyssinia, had an interview with the king; he found his Nubian majesty at his toilette, which was performed by a slave rubbing him all over with a rancid compound of grease and butter, with which his head was dripping as if it had been plunged in water.

His fame as a physician introduced him to the royal haram, in which were about fifty sable queens, whose only covering was a narrow piece of cotton rag round their middle. The favourite beauty was a sturdy dame about six feet high, and corpulent beyond all proportion. Next to the elephant and the rhinoceros, she appeared to Bruce one of the largest living creatures he had ever met with. Her features were of the true negro character. A ring of gold passed through her under lip, and weighed it down till it covered her chin like a flap, and left her teeth bare. The inside of her mouth was stained black with antimony. Her ears, to which heavy gold rings were appended, reached down to her shoulders,

and had the appearance of wings ; the hole which pierced them was distended by the weight, so as easily to admit of three fingers. On her ankles she wore shackles of gold, larger than the fetters of a criminal. The rest of the princesses were ornamented much in the same way, except that some had rings through the gristle of the nose, and chains fastening the outside of each nostril to the ears. Bruce gratified their curiosity by cupping some of them, until the apartment overflowed with the effusion of royal blood. The colour of his skin, which they insisted upon examining, excited their dislike, as they ascribed it to sickness or disease.

After a detention of four months at Sennaar, during which his funds were so completely exhausted that he was obliged to part with his gold chain until only six of the one hundred and eighty-four links were left, Bruce again set forward (September 8th), crossed the great sandy desert of Nubia, and arrived on the 29th of November in a state of great exhaustion at Syéne. He had been obliged to leave his baggage and papers behind at Soffiena ; but having obtained fresh dromedaries from the Aga of Syéne, he retraced his steps forty miles into the wilderness, and had the indescribable satisfaction to recover the whole of his drawings and portmanteaus.

From the point he had now reached, all his dangers may be considered at an end. The journey to Cairo (where he arrived January 10th, 1773) down the Nile, was comparatively safe and easy. His

features and appearance were so totally changed, that nobody in Cairo recognised him. He had not been master of a shirt for fourteen months ; his waistcoat and trowsers were made of a bit of coarse brown woollen blanket ; and another of the same description was wrapt round him. He wore enormous moustachios, but had parted with his long Abyssinian beard at Furshoot. On his head was a thin white muslin cloth tied round a red Turkish cap ; he had neither stockings nor shoes ; his coarse woollen girdle was wrapt eight or ten times round his waist ; in the left side were stuck two English pistols mounted with silver, and in the right a common crooked Abyssinian knife with a handle of rhinoceros horn.

After a short stay Bruce proceeded to Alexandria ; and embarking in a small vessel, he landed safely at Marseilles, after a tedious passage of three weeks. His fame, however, had travelled before him ; and no sooner had he reached the soil of France, than the Count de Buffon, M. Guys, and many other literati who had taken a particular interest in his journey, came to congratulate him on his return, and to listen to the recital of his adventures and discoveries. His reception at Paris was equally flattering ; his travels became the subject of general conversation, and his society was courted by people of learning and rank. In July he repaired to Italy, being anxious on account of his health to try the baths of Poretta.

Here he made a discovery that annoyed him

more than all the perils and sufferings he had undergone. While consul at Algiers, he had fallen in love with a Scotch lady, to whom he had engaged himself by a promise of marriage. In all his wanderings he remained faithful to his engagement : he drank the health of Maria at the fountains of the Nile, and in the dreary desert her charming image was constantly before him. It is easy to conceive his mortification and sorrow when he found that the lady had forgotten him in his long absence, and was then at Rome, comfortably married to the Marchese d'Accoramboni. Bruce appeared without delay before the gates of the Marchese, and insisted that he would either apologize or fight him. The latter, who was entirely unconscious that any such engagement had ever existed, declined both proposals, evidently not a little uneasy at the idea of encountering a gaunt, weather-beaten, sun-burnt savage, in stature six feet four inches good English measure, and with feelings doubly irritated with disease and disappointment. This absurd affair ended with a polite note from the Marchese, who expressed the profoundest respect for the character of his antagonist

At Rome, where Bruce remained for some months, he received marks of particular attention from the nobility, and was presented by Pope Clement XIV., the celebrated Ganganelli, with a series of gold medals, relating to several transactions of his pontificate. In the spring of 1774, he returned to France, and very shortly afterwards arrived in

England, from which he had been absent twelve years. He was introduced to George III., who not only accepted his drawings of Baalbec, Palmyra, and the African cities, but complimented him on the personal exertions he had made to enlarge the bounds of geographical science.

His company, while in London, it may well be supposed, was courted by all classes, the learned and the gay, the young and the old. In describing his adventures, he generally related those circumstances which he thought most likely to amuse people, by the contrast they afforded to the popular customs, fashions, or habits in Europe. But his narratives were so new, so extraordinary, so romantic, and related scenes and manners so totally different from any thing that had been known or heard of in England, that his facts appeared too strong, and his statements began to be received with a degree of incredulity. He was assailed by poets, critics, reviewers, and garret philosophers, from Dr. Johnson to Peter Pindar, who ridiculed the possibility of human beings eating raw flesh, wearing rings in their noses or lips instead of their ears, using rancid butter for pomatum, and plaiting their hair with the entrails of animals instead of playing tunes upon them. All this appeared so horrid, so barbarous, and so un-English, that Bruce was generally regarded as making too free with the traveller's license, and amusing the public with idle fables.

It has been already mentioned that the veracity of Bruce has, since his time, been corroborated by

every traveller that has visited those regions which he describes. Some of his bitterest enemies have, even unwittingly, borne testimony in his favour; and many of his facts that appeared most incredible have been verified, by comparing them with the state of manners and society that is found to exist among other barbarous nations. Bruce, however, was too honest to sacrifice truth to the love of popularity, and too proud to submit to the insolence of his detractors; accordingly, in sullen indignation he retired to Scotland in the autumn of 1774, and took up his residence on his patrimonial estate of Kinnaird. The rebuilding of the mansion-house, and other arrangements which a long absence had rendered necessary, occupied his attention for more than a year and a half, and in some measure diverted his mind from the subject which most naturally and severely oppressed it.

In March, 1776, he married Miss Dundas, daughter of Thomas Dundas, Esq. of Fingask, by his wife, Lady Janet Maitland. This amiable and accomplished person was much younger than Bruce; she lived with him nearly twelve years, and died in 1785, leaving him two children, a son and a daughter. This event threw him into a state of melancholy, which his friends endeavoured to remove, by advising him to silence for ever the calumnies of his literary defamers, by publishing an account of his travels. To this persuasion he at length yielded; and as soon as he had resolved to undertake the task, he performed it with his usual energy and

success. In 1790, seventeen years after his return to Europe, his journals were printed and laid before the public in five large quarto volumes, dedicated to the king. In his preface, he frankly explained the reason which had delayed the publication so long ; and he admits, that “ an undeserved and unexpected neglect, and want of patronage, had been at least part of the cause.” The work, on its appearance, was attacked by the same violent spirit of contradiction that had incessantly persecuted the author ; and it is stated, that in consequence of these calumnies, several copies of it were sold in Dublin as waste paper. The fame and honour of Bruce have long ago emerged from the cloud of misrepresentation which ignorance and prejudice had gendered ; and his name will go down to posterity as one of the most brave, honourable, intelligent, and enterprising travellers that Great Britain ever produced.

The remainder of his history is short. His domestic occupations were divided between the care of his estate and his literary pursuits. His fondness for astronomy induced him to erect a temporary observatory on the top of Kinnaird House, where he made his observations, dressed in the Abyssinian costume ; a circumstance which made the good people in the neighbourhood believe that “ the laird was *gaen daft*.” He was often dressed in a turban, and used almost every morning, in company with his young and amiable daughter, to ride slowly over his grounds to his coaleries, mounted on a

charger of great power and size, which he required in consequence of his extreme corpulence and weight. He occasionally visited London, and kept up a correspondence with the Honourable Daines Barrington, Buffon, and other men of science. He sometimes amused himself in translating the prophecies of Enoch, and even projected an edition of the Bible with notes, pointing out numberless instances in which the Jewish history was singularly confirmed by his own observations.

His temper was irritable, and exceedingly sensitive on the contraverted points of his travels. One day when visiting a relation in East Lothian, a gentleman bluntly remarked in his presence, that “it was impossible the natives of Abyssinia could eat raw meat!” Bruce said not a word, but left the room, and immediately brought from the kitchen a piece of raw beef-steak, peppered and salted in the genuine oriental style. “You shall eat that, sir, or fight me,” he said, handing the platter to the sceptical gentleman; which task being most reluctantly performed, “Now sir (said Bruce calmly), you will never again say it is *impossible*.”

The last act of his life was one of courtesy. A large party had dined at Kinnaird; and when the company were about to depart, Bruce, who was gaily talking to a young lady in the drawing-room, observed that her aged mother was proceeding to her carriage unattended. In hurrying to her assistance, at the head of the great staircase, his foot—the foot that had borne him in safety through so many dangers

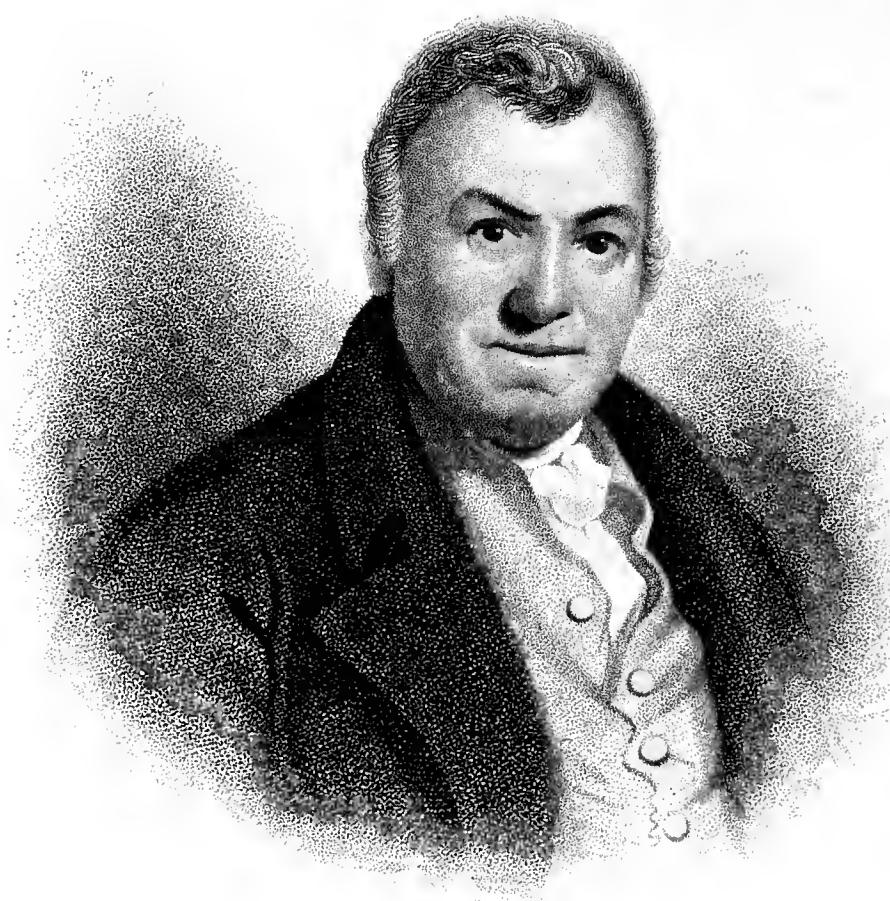
in so many distant lands—slipt ; he fell down several steps, broke some of his fingers, pitched on his head, and expired. Every attempt to restore animation was unavailing, the vital spark had fled. Four days after his death, the body was deposited in the church-yard of Larbert, in a tomb which Bruce had built for his wife and his infant child. In passing through that village, the eye of the traveller is arrested by a monument, plain in its architecture, but somewhat more conspicuous from its position than the rest. It marks the spot where reposes the dust of the celebrated explorer of the fountains of the Nile. On the south side is the following inscription :—

IN THIS TOMB ARE DEPOSITED THE REMAINS
OF
JAMES BRUCE, ESQ. OF KINNAIRD,
WHO DIED ON THE 27TH OF APRIL, 1794,
IN THE 64TH YEAR OF HIS AGE.

HIS LIFE WAS SPENT IN PERFORMING
USEFUL AND SPLENDID ACTIONS :
HE EXPLORED MANY DISTANT REGIONS :
HE DISCOVERED THE SOURCES OF THE NILE :
HE TRAVERSED THE DESERTS OF ARABIA.

HE WAS AN AFFECTIONATE HUSBAND,
AN INDULGENT PARENT,
AN ARDENT LOVER OF HIS COUNTRY.

BY THE UNANIMOUS VOICE OF MANKIND,
HIS NAME IS ENROLLED WITH THOSE
WHO WERE CONSPICUOUS
FOR GENIUS, FOR VALOUR, AND FOR VIRTUE.



Lizars sc

B E W I C K .

Thomas Bewick

Engraving for the Naturalists Library.

MEMOIR
OF
THOMAS BEWICK,
EMINENT ENGRAVER ON WOOD.

ALTHOUGH the Biographical Notices prefixed to these volumes have hitherto been confined to Scientific Naturalists, yet, as no one perhaps has contributed more essentially to promote the study of Zoology, in two of its most important branches, than the ingenious Artist whose name stands at the head of this article, it appears no more than an act of justice to offer, in this way, a respectful tribute to his memory.

Though the art of cutting or engraving on wood is undoubtedly of high antiquity, as the Chinese and Indian modes of printing on paper, cotton, and silk, sufficiently prove; though, even in Europe, the art

of engraving on blocks of wood may probably be traced higher than that of printing usually so called ; and though, in the fifteenth and sixteenth centuries, designs were executed of great beauty and accuracy, such as Holbein's "Dance of Death," the vignettes and head-letters of the early Missals and Bibles, and the engravings of flowers and shells in Gerard, Gesner, and Fuhschius ; yet the bare inspection of these is sufficient to prove that their methods must have been very different from that which Bewick and his school have followed. The principal characteristic of the ancient masters is the crossing of the black lines, to produce or deepen the shade, commonly called *cross-hatching*. Whether this was done by employing different blocks, one after another, as in calico-printing and paper-staining, it may be difficult to say ; but to produce them on the same block is so difficult and unnatural, that, though Nesbit, one of Bewick's early pupils, attempted it on a few occasions, and the splendid print of *Dentatus* by Harvey shews that it is not impossible even on a large scale, yet the waste of time and labour is scarcely worth the effect produced.

To understand this, it may be necessary to state, for the information of those who may not have seen an engraved block of wood, that whereas the lines

which are sunk by the graver on the surface of a copper-plate are the parts which receive the printing ink, which is first smeared over the whole plate, and the superfluous ink is scraped and rubbed off, that remaining in the lines being thus transferred upon the paper, by its being passed, together with the plate, through a rolling-press, the rest being left white—in the wooden block, all the parts which are intended to leave the paper white, are carefully scooped out with burins and gouges, and the lines and other parts of the surface of the block which are left prominent, after being inked, like types, with a ball or roller, are transferred to the paper by the common printing-press. The difficulty, therefore, of picking out, upon the wooden block, the minute squares or lozenges, which are formed by the mere intersection of the lines cut in the copper-plate, may easily be conceived.

The great advantage of wood-engraving is, that the thickness of the blocks (which are generally of boxwood, sawed across the grain) being carefully regulated by the height of the types with which they are to be used, are set up in the same page with the types ; and only one operation is required to print the letter-press and the cut which is to illustrate it. The greater permanency, and indeed

almost indestructibility,* of the wooden block, is besides secured ; since it is not subjected to the scraping and rubbing, which so soon destroys the sharpness of the lines upon copper : and there is a harmony produced in the page, by the engraving and the letter-press being of the same colour ; which is very seldom the case where copper-plate vignettes are introduced with letter-press.

It is difficult, perhaps impossible, to trace the history of wood-engraving, its early principles, the causes of its decay, &c., till its productions came to sink below contempt. But for its revival and present state we are unquestionably indebted to Bewick and his pupils.

THOMAS BEWICK was born August 12. 1753, at Cherry-Burn, in the parish of Ovingham, and county of Northumberland. His father, John Bewick, had for many years a landsale colliery at Mickley-Bank, now in the possession of his son William. John Bewick, Thomas's younger brother, and coad-

* Many of Mr Bewick's blocks have printed upwards of 300,000 : the head-piece of the Newcastle Courant above a million ; and a small vignette for a capital letter in the Newcastle Chronicle, during a period of twenty years, at least two millions.

jutor with him in many of his works, was born in 1760—unfortunately for the arts and for society, of which he was an ornament, died of a consumption, at the age of thirty-five.

The early propensity of Thomas to observe natural objects, and particularly the manners and habits of animals, and to endeavour to express them by drawing, in which, without tuition, he manifested great proficiency at an early age, determined his friends as to the choice of a profession for him. He was bound apprentice, at the age of fourteen, to Mr Ralph Beilby of Newcastle, a respectable copper-plate engraver, and very estimable man.* Mr Bewick might have had a master of greater eminence, but he could not have had one more anxious to encourage the rising talents of his pupil, to point out to

* It is stated by the author of “The Pursuit of Knowledge under Difficulties,” forming a part of the Library of Entertaining Knowledge (we know not on what authority, but we think it probable,) that he was in the habit of exercising his genius by covering the walls and doors of his native village with sketches in chalk of his favourites of the lower creation with great accuracy and spirit; and that some of these performances chancing to attract Mr Beilby’s notice, as he was passing through Cherry-Burn, he was so much struck with the talent which they displayed, that he immediately sought out the young artist, and obtained his father’s permission to take him with him as his apprentice.

him his peculiar line of excellence, and to enjoy without jealousy his merit and success, even when it appeared, in some respects, to throw himself into the shade. When Mr Charles Hutton, afterwards the eminent Professor Hutton of Woolwich, but then a schoolmaster in Newcastle, was preparing, in 1770, his great work on Mensuration, he applied to Mr Beilby to engrave on copper-plates the mathematical figures for the work. Mr Beilby judiciously advised that they should be cut on wood, in which case, each might accompany, on the same page, the proposition it was intended to illustrate. He employed his young apprentice to execute many of these ; and the beauty and accuracy with which they were finished, led Mr Beilby to advise him strongly to devote his chief attention to the improvement of this long-lost art. Several mathematical works were supplied, about this time, with very beautiful diagrams ; particularly Dr Enfield's translation of Rossignol's Elements of Geometry.

On the expiration of his apprenticeship, he visited the metropolis for a few months, and was, during this short period, employed by an engraver in the vicinity of Hatton-Garden. But London, with all its gaieties and temptations, had no attractions for Bewick : he panted for the enjoyment of his native

air, and for indulgence in his accustomed rural habits. On his return to the North, he spent a short time in Scotland, and afterwards became his old master's partner, while John, his brother, was taken as their joint-apprentice.

About this time, Mr Thomas Saint, the printer of the Newcastle Courant, projected an edition of Gay's Fables, and the Bewicks were engaged to furnish the cuts. One of these, "The Old Hound," obtained the premium of the Society of Arts, for the best specimen of wood-engraving, in 1775. An impression of this may be seen in the Memoir prefixed to "Select Fables," printed for Charnley, Newcastle, in 1820; from which many notices in the present Memoir are taken. Mr Saint, in 1776, published also a work entitled, *Select Fables*, with an indifferent set of cuts, probably by some inferior artist; but in 1779 came out a new edition of Gay, and, in 1784, of the *Select Fables*, with an entire new set of cuts, by the Bewicks.

It has been already said, that Thomas Bewick, from his earliest youth, was a close observer and accurate delineator of the forms and habits of animals; and, during his apprenticeship, and indeed throughout his whole life, he neglected no opportunity of visiting and drawing such foreign animals as were

exhibited in the different itinerant collections which occasionally visited Newcastle. This led to the project of the “History of Quadrupeds;” a Prospectus of which work, accompanied by specimens of several of the best cuts then engraved, was printed and circulated in 1787; but it was not till 1790 that the work appeared.

In the mean time, the Prospectus had the effect of introducing the spirited undertaker to the notice of many ardent cultivators of natural science, particularly of Marmaduke Tunstall, Esq. of Wycliffe, whose museum was even then remarkable for the extent of its treasures, and for the skill with which they had been preserved; whose collection also of living animals, both winged and quadruped, was very considerable. Mr Bewick was invited to visit Wycliffe, and made drawings of various specimens, living and dead, which contributed greatly to enrich his subsequent publications. The portraits which he took with him of the wild cattle in Chillingham Park, the seat of the Earl of Tankerville (whose agent, Mr John Bailey, was also an eminent naturalist, and very intimate friend of Mr Bewick), particularly attracted Mr Tunstall’s attention; and he was very urgent to obtain a representation, upon a larger scale than was contemplated for his projected work, of

those now *unique* specimens of the “ancient Caledonian breed.” For this purpose, Mr Bewick made a special visit to Chillingham, and the result was the largest wood-cut he ever engraved; which, though it is considered as his *chef d'œuvre*, seemed, in its consequences, to shew the limits within which wood-engraving should generally be confined. The block, after a few impressions had been taken off, split into several pieces, and remained so till, in the year 1817, the richly figured border having been removed, the pieces containing the figure of the wild bull were so firmly clamped together, as to bear the force of the press; and impressions may still be had. A few proof-impressions on thin vellum of the original block, with the figured border, have sold as high as twenty guineas.

As it obviously required much time, as well as labour, to collect, from various quarters, the materials for a “General History of Quadrupeds,” it is evident that much must have been done in other ways, in the regular course of ordinary business. In a country engraver’s office, much of this requires no record; but, during this interval, three works on copper seem to have been executed, chiefly by Mr Thomas Bewick. A small quarto volume, entitled, “A Tour through Sweden, Lapland, &c., by Matthew

Consett, Esq., accompanied by Sir G. H. Liddell, was illustrated with engravings by Beilby and Bewick, the latter executing all those relating to natural history, particularly the rein-deer and their Lapland keepers, brought over by Sir H. Liddell, whom he had thus the unexpected opportunity of delineating from the life. During this interval, he also drew and engraved on copper, at the expense of their respective proprietors, "The Whitley large Ox," belonging to Mr Edward Hall, the four quarters of which weighed 187 stone; and "The remarkable Kyloe Ox," bred in Mull by Donald Campbell, Esq. and fed by Mr Robert Spearman of Rothley Park, Northumberland. This latter is a very curious specimen of copper-plate engraving, combining the styles of wood and copper, particularly in the minute manner in which the verdure is executed.

At length appeared "The General History of Quadrupeds," a work uncommonly well received by the public, and ever since held in increased estimation. Perhaps there never was a work to which the rising generation of the day was, and no doubt that for many years to come will be, under such obligations, for exciting in them a taste for the natural history of animals. The representations which are given of the various tribes, possess a boldness of de-

sign, a correctness of outline, an exactness of attitude, and a discrimination of general character, which convey, at the first glance, a just and lively idea of each different animal. The figures were accompanied by a clear and concise statement of the nature, habits, and disposition of each animal: these were chiefly drawn up by his able coadjutors, Mr Beilby, his partner, and his printer Mr Solomon Hodgson; subject, no doubt, to the corrections and additions of Mr Bewick. In drawing up these descriptions, it was the endeavour of the publishers to lay before their readers a particular account of the quadrupeds of our own country, especially of those which have so materially contributed to its strength, prosperity, and happiness, and to notice the improvements which an enlarged system of agriculture, supported by a noble spirit of generous emulation, has diffused throughout the country.

But the great and, to the public in general, unexpected, charm of the History of Quadrupeds, was the number and variety of the vignettes and tail-pieces, with which the whole volume is embellished. Many of these are connected with the manners and habits of the animals near which they are placed; others are, in some other way, connected with them, as being intended to convey to those who avail them-

selves of their labours, some salutary moral lesson, as to their humane treatment ; or to expose, by perhaps the most cutting possible satire, the cruelty of those who ill-treat them. But a great proportion of them express, in a way of dry humour peculiar to himself, the artist's particular notions of men and things, the passing events of the day, &c. &c. ; and exhibit often such ludicrous, and, in a few instances, such serious and even awful, combinations of ideas, as could not perhaps have been developed so forcibly in any other way.

From the moment of the publication of this volume, the fame of Thomas Bewick was established on a foundation not to be shaken. It has passed through seven large editions, with continually growing improvements.

It was observed before, that Mr Bewick's younger brother, John, was apprenticed to Mr Beilby and himself. He naturally followed the line of engraving so successfully struck out by his brother. At the close of his apprenticeship, he removed to London, where he soon became very eminent as a wood-engraver ; indeed, in some respects, he might be said to excel the elder Bewick. This naturally induced Mr William Bulmer, the spirited proprietor of the "Shakspeare Press," himself a Newcastle

man, to conceive the desire of giving to the world a complete specimen of the improved arts of type and block-printing ; and for this purpose he engaged the Messrs Bewicks, two of his earliest acquaintances, to engrave a set of cuts to embellish the poems of Goldsmith, *The Traveller* and *Deserted Village*, and *Parnell's Hermit*. These appeared in 1795, in a royal quarto volume, and attracted a great share of public attention, from the beauty of the printing and the novelty of the embellishments, which were executed with the greatest care and skill, after designs made from the most interesting passages of the poems, and were universally allowed to exceed every thing of the kind that had been produced before. Indeed, it was conceived almost impossible that such delicate effects could be obtained from blocks of wood ; and it is said that his late Majesty (George III.) entertained so great a doubt upon the subject, that he ordered his bookseller, Mr G. Nicol, to procure the blocks from Mr Bulmer, that he might convince himself of the fact.

The success of this volume induced Mr Bulmer to print, in the same way, Somerville's *Chase*. The subjects which ornament this work being entirely composed of landscape scenery and animals, were peculiarly adapted to display the beauties of wood-

engraving. Unfortunately for the arts, it was the last work of the younger Bewick, who died at the close of 1795, of a pulmonary complaint, probably contracted by too great application. He is justly described in the monumental inscription in Ovingham church-yard, as “only excelled as to his ingenuity as an artist by his conduct as a man.” Previously, however, to his death, he had drawn the whole of the designs for the Chase on the blocks, except one ; and the whole were beautifully engraved by his brother Thomas.

In 1797, Messrs Beilby and Bewick published the first volume of the “History of British Birds,” comprising the land-birds. This work contains an account of the various feathered tribes, either constantly residing in, or occasionally visiting, our islands. While Bewick was engraving the cuts (almost all faithfully delineated from nature), Mr Beilby was engaged in furnishing the written descriptions. Some unlucky misunderstandings having arisen about the appropriation of this part of the work, a separation of interests took place between the parties, and the compilation and completion of the second volume, “Water-birds,” devolved on Mr Bewick alone—subject, however, to the literary corrections of the Rev. Henry Cotes, Vicar of Bedlington. In the

whole of this work, the drawings are minutely accurate, and express the natural delicacy of feather, down, and accompanying foliage, in a manner particularly happy. And the variety of vignettes and tail-pieces, and the genius and humour displayed in the whole of them (illustrating, besides, in a manner never before attempted, the habits of the birds), stamps a value on the work superior to the former publication on Quadrupeds.* This also has passed

* “ Of Bewick’s powers, the most extraordinary is the perfect accuracy with which he seizes and transfers to paper the natural objects which it is his delight to draw. His landscapes are absolute *fac-similes*; his animals are whole-length portraits. Other books on natural history have fine engravings; but still, neither beast nor bird in them have any character; dogs and deer, lark and sparrow, have all airs and countenances marvellously insipid, and of a most flat similitude. You may buy dear books, but if you want to know what a bird or quadruped *is*, to Bewick you must go at last. It needs only to glance at the works of Bewick, to convince ourselves with what wonderful felicity the very countenance and air of his animals are marked and distinguished. There is the grave owl, the silly wavering lapwing, the pert jay, the impudent over-fed sparrow, the airy lark, the sleepy-headed gourmand duck, the restless titmouse, the insignificant wren, the clean harmless gull, the keen rapacious kite—every one has his character.”

“ His vignettes are just as remarkable. Take his British Birds, and in the tail-pieces to these volumes you shall find the most touching representations of Nature in all her forms, animate and inanimate. There are the poachers tracking a hare in the snow; and the urchins who have accomplished the creation of a “ snow-man;” the disap-

through many editions, with and without the letter-press.

pointed beggar leaving the gate open for the pigs and poultry to march over the good dame's linen, which she is laying out to dry; the thief who sees devils in every bush—a sketch that Hogarth himself might envy; the strayed infant standing at the horse's heels, and pulling his tail, while the mother is in an agony flying over the style; the sportsman who has slipped into the torrent; the blind man and boy, unconscious of “Keep on this side;” and that best of burlesques on military pomp, the four urchins astride of gravestones for horses, the first blowing a glass trumpet, and the others bedizened in tatters, with rush-caps and wooden swords.

“Nor must we pass over his sea-side sketches, all inimitable. The cutter chasing the smuggler—is it not evident that they are going at the rate of at least ten knots an hour? The tired gulls sitting on the waves, every curled head of which seems big with mischief. What pruning of plumage, what stalkings, and flappings, and scratchings of the sand, are depicted in that collection of sea-birds on the shore! What desolation is there in that sketch of coast after a storm, with the solitary rock, the ebb-tide, the crab just venturing out, and the mast of the sunken vessel standing up through the treacherous waters! What truth and minute nature is in that tide coming in, each wave rolling higher than its predecessor, like a line of conquerors, and pouring in amidst the rocks with increased aggression! And, last and best, there are his fishing scenes. What angler's heart but beats whenever the pool-fisher, deep in the water, his rod bending almost double with the rush of some tremendous trout or heavy salmon? Who does not recognize his boyish days in the fellow with the “set rods,” sheltering himself from the soaking rain behind an old tree? What fisher has not seen yon “old codger,” sitting by the river side, peering over his tackle, and putting on a brandling?

Mr Bewick's next works were on a larger scale: four very spirited and accurate representations of a zebra, an elephant, a lion, and a tiger, from the collection and for the use of Mr Pidcock, the celebrated exhibitor of wild beasts. A few impressions were taken of each of these, which are now very scarce.

In 1818, he published a collection of Fables, en-

" Bewick's landscapes, too, are on the same principle with his animals: they are for the most part portraits, the result of the keenest and most accurate observation. You perceive every stone and bunch of grass has had actual existence: his moors are north-country moors, the progeny of Cheviot, Rimside, Simonside, or Carter. The tail-piece of the old man pointing out to his boy an ancient monumental stone, reminds one of the Millfield plain, or Flodden Field. Having only delineated that in which he himself has taken delight, we may deduce his character from his pictures: his heartfelt love of his native country, its scenery, its manners, its airs, its men and women; his propensity

..... by himself to wander
Adown some trotting burn's meander,
And no thinks lang:

his intense observation of nature and human life; his satirical and somewhat coarse humour; his fondness for maxims and old saws; his vein of worldly prudence now and then "cropping out," as the miners call it, into day-light; his passion for the sea-side, and his delight in "the angler's solitary trade:" All this, and more, the admirer of Bewick may deduce from his sketches."—*Blackwood's Magazine*, p. 2, 3.

titled, “The Fables of Æsop and others, with Designs by T. Bewick.” This work has not, however, been received by the public with so much favour.

In 1820, Mr Emerson Charnley, bookseller in Newcastle, having purchased of Messrs Wilson & York a large collection of wood-cuts, which had been engraved by the Bewicks in early life, for various works printed by Saint, conceived the design of employing them in the illustration of a volume of Select Fables (already referred to). Though aware that Mr Bewick wished it to be fully understood that he had no wish to “feed the whimsies of bibliomanists,” as he himself expressed it, and perhaps was a little jealous of all the imperfections of his youth being set before the public, yet the Editor conceived that he was rendering to the curious in wood-engraving a very acceptable service, by thus rescuing from oblivion so many valuable specimens of the early talents of the revivors of this elegant art. They were thus enabled to study the gradual advance towards excellence of these ingenious artists, from their very earliest beginnings, and to trace the promise of talents at length so conspicuously developed.

Mr Bewick, however, was also engaged from time to time, by himself and his pupils, in furnishing em-

bellishments to various other works, which it is now impossible to particularize. One may be mentioned, Dr Thornton's "Medical Botany." But as he had himself no knowledge of this department of natural science, the cuts engraved for this work were merely servile copies of the drawings sent, executed with great exactness indeed, but not at all *con amore*. It is believed that the work itself obtained very little of the public attention.

Several of the later years of Mr Bewick's life were, in part at least, devoted to a work on British Fishes. A number of very accurate drawings were made by himself, and more by his son Robert, whose accuracy in delineation is perhaps equal to his father's. From twenty to thirty of these had been actually engraved, and a very large proportion (amounting to more than a hundred) of vignettes, consisting of river and coast scenery, the humours of fishermen and fishwomen, the exploits of birds of prey in fish-taking, &c. It was hoped that his son would have gone on with and completed the work, but in this the public have been disappointed; and now that Mr Yarrell's beautiful work is completed, it possibly might not answer.

Mr Bewick had a continued succession of pupils, many of whom have done the highest honour to their

preceptor ; and some are carrying the art to a stage of advancement, at which he himself had the candour to acknowledge, on the inspection of Northcote's Fables, he had never conceived that it would arrive. It is almost needless to mention the names of Nesbit and Harvey. Others were cut off by death, or still more lamentable circumstances, who would otherwise have done great credit to their master ; as Johnson, whose premature death occurred in Scotland, while copying some of the pictures of Lord Breadalbane, Clennel, Ranson—Hole, whose exquisite vignette in the title-page of Mr Shepherd's Poggio gave the highest promise, was stopped in a more agreeable way, by succeeding to a handsome fortune.

The last project of Mr Bewick was, to improve at once the taste and morals of the lower classes, particularly in the country, by a series of blocks on a large scale, to supersede the wretched, sometimes immoral, daubs with which the walls of cottages are too frequently clothed. A cut of an Old Horse, intended to head an Address on Cruelty to that noble animal, was his last production : the proof of it was brought to him from the press only three days before he died.

It may be observed, that, in the works of the early

masters, in the art of wood engraving, there was little more attempted than a bold outline. It remained for the burine of Bewick to produce a more complete and finished effect, by displaying a variety of tints, and producing a perspective, in a way that astonished even the copperplate engravers, by slightly lowering the surface of the block where the distance or lighter parts were to be shewn. This was first suggested by his early acquaintance Bulmer, who, during the period of their joint apprenticeship, invariably took off, at his master's office, proof-impressions of Bewick's blocks. He particularly printed for his friend the engraving of the Huntsman and Old Hound, which, as has been already observed, obtained for the young artist the premium from the Society of Arts.

Mr Bewick was in person robust, well formed and healthy. He was fond of early rising, walking, and indulging in all the rustic and athletic sports so prevalent in the north of England. Many portraits of him have been engraved and published; but the only full-length portrait of him was executed by Nicholson, and engraved by his pupil Ranson.* It

* Mr Audubon reminds me that there is another, and striking, full-length, by Mr Good, whose peculiar mode of throwing the light upon his portraits has been much

was afterwards proposed by a select number of his friends and admirers, to have a bust of him executed in marble, as a lasting memorial of the high regard they entertained for his genius and excellent character. The bust was executed by Baily with great fidelity and taste ; and was presented, by the subscribers, to the Council and Members of the Literary and Philosophical Society of Newcastle, and now occupies a situation in the most prominent part of the spacious library-room of that useful Institution.

Many anecdotes are current among his friends concerning the occasions of many of his vignettes. Among others, one is told of a person, who had for many years supplied him with coals, being convicted of defrauding him in measure, on which occasion he sent him a letter of rebuke for his ingratitude and dishonesty. At the bottom of the letter, he sketched with his pen the figure of a man in a coal cart, accompanied by a representation of the devil close by his side, who is stopping the vehicle immediately under a gallows, beneath which was written, “ *The end and punishment of all dishonest men.*” This well-timed satire so affected the nervous system of the poor delinquent, and deservedly admired : it is in the possession of the family.

that he immediately confessed his guilt, and on his knees implored his pardon. This small sketch was afterwards adopted as a tail-piece, which may be seen in the first volume of the *British Birds*, p. 110.* (First Edition.)

Mr Bewick was a man of warm attachments, particularly to the younger branches of his family. It is known that, during his apprenticeship, he seldom failed to visit his parents once a week at Cherry-Burn, distant about fourteen miles from Newcastle; and when the Tyne was so swelled with rain and land floods, that he could not get across, it was his practice to shout over to them, and, having made inquiries after the state of their health, to return home.

In 1825, in a letter to an old crony in London, after describing with a kind of enthusiastic pleasure the domestic comforts which he daily enjoyed, he says, "I might fill you a sheet in dwelling on the merits of my young folks, without being a bit afraid of any remarks that might be made upon me, such

* In page 82 of the same volume is the representation of a cart-horse running away with some affrighted boys, who had got into the cart while the careless driver was drinking in a hedge-alehouse. It is observable, that the rapidity of the cart is finely expressed by the almost total disappearance of the spokes of the wheel; a circumstance, it is believed, never before noticed by an artist.

as ‘look at the old fool, he thinks there’s nobody has *sic bairns as he has.*’ In short, my son and three daughters do all in their power to make their parents happy.”

Mr Bewick was naturally of the most persevering and industrious habits. The number of blocks he has engraved is almost incredible. At his bench he worked and *whistled* with the most perfect good humour, from morn to night, and ever and anon thought the day too short for the extension of his labours. He did not mix much with the world, for he possessed a singular and most independent mind. In the evening, indeed, when the work of the day was finished, he generally retired to a neighbouring public-house, to smoke his pipe, and drink his glass of porter with an old friend or two, who knew his haunt, and enjoyed the *naïveté* and originality of his remarks. But he luxuriated in the bosom of his family; and no pleasures he could enjoy in the latter stage of his life, were equal in his esteem to the sterling comforts of his own fireside. He died, as he had lived, an upright and truly honest man; and breathed his last after a short illness, in the midst of his affectionate and disconsolate offspring, at his residence in West Street, Gateshead, on Saturday November 8. 1828, in the 76th year of his age. His

remains were accompanied by a numerous train of friends, to the family burial-place at Ovingham, and deposited along with his parents, his wife (who had died February 1. 1826, aged 72), and his brother previously mentioned.*

Much more might be said of this distinguished artist. More has been said. In Blackwood's Magazine (for 1825), there is a very elegant critique upon Mr Bewick's works. † In the first volume of the Transactions of the Natural History Society of Newcastle, p. 132, is a Memoir of Mr Bewick, by George Clayton Atkinson, Esq., whose love of nature led him, while very young, to seek the acquaintance of our native artist, who was always ready to encourage rising merit. But amidst much judicious remark, there is a detail of particular conversations, &c. which, though highly interesting in this particular neighbourhood, would probably not be so to the public at large. In the third volume of Audubon's

* There is an affecting tail-piece (the final one in his Fables, 1820), in which he describes "The End of All," representing his own funeral, with a view of the west end of Ovingham church, and the two family monuments fixed in the wall. And it may be interesting also to notice, as a proof of that family-attachment mentioned in p. 36, that the tail-piece in p. 162 of his Fables bears the date of his mother's, and that in p. 176 of his father's death.

† For an extract from which, see Note, p. 31.

Ornithological Biography, p. 300, an account of his interviews with Mr Bewick, during his residence in Newcastle, forms one of those delightful "Episodes" with which he contrives to enliven his accounts of birds. We have taken the liberty of quoting it.

"Through the kindness of Mr Selby of Twizel-House in Northumberland, I had anticipated the pleasure of forming an acquaintance with the celebrated and estimable Bewick, whose works indicate an era in the history of the art of engraving on wood. In my progress southward, after leaving Edinburgh in 1827, I reached Newcastle-upon-Tyne about the middle of April, when Nature had begun to decorate anew the rich country around. The lark was in full song, the blackbird rioted in the exuberance of joy, the husbandman cheerily plied his healthful labours, and I, although a stranger in a foreign land, felt delighted with all around me, for I had formed friends who were courteous and kind, and whose favour I had reason to hope would continue. Nor have I been disappointed in my expectations.

"Bewick must have heard of my arrival at Newcastle before I had an opportunity of calling upon him, for he sent me by his son the following note:—
'T. Bewick's compliments to Mr Audubon, and will

be glad of the honour of his company this day to tea at six o'clock.' These few words at once proved to me the kindness of his nature, and, as my labours were closed for the day, I accompanied the son to his father's house.

" As yet I had seen but little of the town, and had never crossed the Tyne. The first remarkable object that attracted my notice was a fine church, which my companion informed me was that of St. Nicholas. Passing over the river by a stone bridge of several arches, I saw by the wharfs a considerable number of vessels, among which I distinguished some of American construction. The shores on either side were pleasant, the undulated ground being ornamented with buildings, windmills, and glass-works. On the water glided, or were swept along by great oars, boats of singular form, deeply laden with the subterranean produce of the hills around.

" At length we reached the dwelling of the engraver, and I was at once shewn to his workshop. There I met the old man, who, coming towards me, welcomed me with a hearty shake of the hand, and for a moment took off a cotton night-cap, somewhat soiled by the smoke of the place. He was a tall stout man, with a large head, and with eyes placed farther apart than those of any man that I have ever

seen :—a perfect old Englishman, full of life, although seventy-four years of age, active and prompt in his labours. Presently he proposed shewing me the work he was at, and went on with his tools. It was a small vignette, cut on a block of boxwood not more than three by two inches in surface, and represented a dog frightened at night by what he fancied to be living objects, but which were actually roots and branches of trees, rocks, and other objects bearing the semblance of men. This curious piece of art, like all his works, was exquisite, and more than once did I feel strongly tempted to ask a rejected bit, but was prevented by his inviting me up stairs, where, he said, I should soon meet all the best artists of Newcastle.

“ There I was introduced to the Misses Bewick, amiable and affable ladies, who manifested all anxiety to render my visit agreeable. Among the visitors I saw a Mr Good, and was highly pleased with one of the productions of his pencil, a full-length miniature in oil of Bewick, well drawn, and highly finished.

“ The old gentleman and I stuck to each other, he talking of my drawings, I of his wood-cuts. Now and then he would take off his cap, and draw up his grey worsted stockings to his nether clothes ; but whenever our conversation became animated, the re-

placed cap was left sticking as if by magic to the hind part of his head, the neglected hose resumed their downward tendency, his fine eyes sparkled, and he delivered his sentiments with a freedom and vivacity which afforded me great pleasure. He said he had heard that my drawings had been exhibited in Liverpool, and felt great anxiety to see some of them, which he proposed to gratify by visiting me early next morning along with his daughters and a few friends. Recollecting at that moment how desirous my sons, then in Kentucky, were to have a copy of his works on Quadrupeds, I asked him where I could procure one, when he immediately answered 'here,' and forthwith presented me with a beautiful set.

" The tea-drinking having in due time come to an end, young Bewick, to amuse me, brought a bagpipe of a new construction, called the Durham Pipe, and played some simple Scotch, English, and Irish airs, all sweet and pleasing to my taste. I could scarcely understand how, with his large fingers, he managed to cover each hole separately. The instrument sounded somewhat like a hautboy, and had none of the shrill warlike notes or booming sound of the Highland bagpipe. The company dispersed at an

early hour, and when I parted from Bewick that night, I parted from a friend.

“ A few days after this I received another note from him, which I read hastily, having with me at the moment many persons examining my drawings. This note having, as I understood it, intimated his desire that I should go and dine with him that day, I accordingly went ; but judge of my surprise when, on arriving at his house at 5 o’clock, with an appetite becoming the occasion, I discovered that I had been invited to tea and not to dinner. However, the mistake was speedily cleared up to the satisfaction of all parties, and an abundant supply of eatables was placed on the table. The Reverend William Turner joined us, and the evening passed delightfully. At first our conversation was desultory and multifarious, but when the table was removed, Bewick took his seat at the fire, and we talked of our more immediate concerns. In due time we took leave, and returned to our homes, pleased with each other and with our host.

“ Having been invited the previous evening to breakfast with Bewick at 8, I revisited him at that hour, on the 16th April, and found the whole family so kind and attentive that I felt quite at home. The

good gentleman, after breakfast, soon betook himself to his labours, and began to shew me, as he laughingly said, how easy it was to cut wood ; but I soon saw that cutting wood in his style and manner was no joke, although to him it seemed indeed easy. His delicate and beautiful tools were all made by himself, and I may with truth say that his shop was the only artist's 'shop' that I ever found perfectly clean and tidy. In the course of the day Bewick called upon me again, and put down his name on my list of subscribers in behalf of the Literary and Philosophical Society of Newcastle. In this, however, his enthusiasm had misled him, for the learned body for which he took upon himself to act, did not think proper to ratify the compact.

" Another invitation having come to me from Gatehead, I found my good friend seated in his usual place. His countenance seemed to me to beam with pleasure as he shook my hand. ' I could not bear the idea,' said he, ' of your going off, without telling you, in written words, what I think of your Birds of America. Here it is in black and white, and make of it what use you may, if it be of use at all.' I put the unsealed letter in my pocket, and we chatted on subjects connected with natural history. Now and then he would start and exclaim, ' Oh, that I

were young again ! I would go to America too. Hey ! what a country it will be, Mr Audubon.' I retorted by exclaiming, ' Hey ! what a country it is already, Mr Bewick !' In the midst of our conversation on birds and other animals, he drank my health and the peace of all the world in hot brandy toddy, and I returned the compliment, wishing, no doubt, in accordance with his own sentiments, the health of all our enemies. His daughters enjoyed the scene, and remarked, that, for years, their father had not been in such a flow of spirits.

" I regret that I have not by me at present the letter which this generous and worthy man gave me that evening, otherwise, for his sake, I should have presented you with it. It is in careful keeping, however, as a memorial of a man whose memory is dear to me ; and be assured I regard it with quite as much pleasure as a manuscript ' Synopsis of the Birds of America,' by Alexander Wilson, which this celebrated individual gave to me at Louisville in Kentucky, more than twenty years ago. Bewick's letter, however, will be presented to you along with many others, in connection with some strange facts, which I hope may be useful to the world. We protracted our conversation much beyond our usual time of retiring to rest, and at his earnest request, and

much to my satisfaction, I promised to spend the next evening with him, as it was to be my last at Newcastle for some time.

“ On the 19th of the same month I paid him my last visit, at his house. When we parted, he repeated three times, ‘God preserve you, God bless you!’ He must have been sensible of the emotion which I felt, and which he must have read in my looks, although I refrained from speaking on the occasion.

“ A few weeks previous to the death of this fervent admirer of nature, he and his daughters paid me a visit to London. He looked as well as when I had seen him at Newcastle. Our interview was short but agreeable, and when he bade adieu, I was certainly far from thinking that it might be the last. But so it was, for only a very short time had elapsed when I saw his death announced in the newspapers.

“ My opinion of this remarkable man is, that he was purely a son of nature, to whom alone he owed nearly all that characterized him as an artist and a man. Warm in his affections, of deep feeling, and possessed of a vigorous imagination, with correct and penetrating observation, he needed little extraneous aid to make him what he became, the first engraver on wood that England has produced. Look at his tail-pieces, Reader, and say if you ever saw so much

life represented before, from the glutton who precedes the Great Black-backed Gull, to the youngsters flying their kite, the disappointed sportsman who, by shooting a magpie, has lost a woodcock, the horse endeavouring to reach the water, the bull roaring near the style, or the poor beggar attacked by the rich man's mastiff. As you turn each successive leaf, from beginning to end of his admirable books, scenes calculated to excite your admiration everywhere present themselves. Assuredly you will agree with me in thinking that in his peculiar path none has equalled him. There may be men now, or some may in after years appear, whose works may in some respects rival or even excel his, but not the less must Thomas Bewick of Newcastle-on-Tyne be considered in the art of engraving on wood what Linnaeus will ever be in natural history, though not the founder, yet the enlightened improver and illustrious promoter."

It was indeed hoped that more might have been learned of Bewick from his own pen; for it is known that he had, to fill up the vacant evenings of the last two years of his life, devoted his attention to writing a memoir of himself, for which he had prepared portraits and profiles of several of his friends, together

with several other engravings. But his children, finding, probably, that much related to events and circumstances that principally concerned themselves, and family affairs, which, however interesting to themselves, might not be so to the public, or might subject them to the imputation of vanity, have, with a delicacy that cannot but be respected, declined its publication.

NOTE.

As we conceive all will feel an interest in the character and history of this extraordinary man ; we make no apology for introducing here some memoranda of his more familiar hours, contributed to Loudon's Magazine in 1829-30, shortly after his death, by his personal friend, John F. M. Dovaston, Esq. A. M.

“ The brief and desultory remarks I am about to incorporate amid the congenial pages of your Magazine of Natural History, arise from a fond and fertile memory of much conversation, and a long and frequent correspondence, with my excellent and beloved friend.

“ The first time I had a *personal* interview with the venerable Bewick, was at Newcastle-upon-Tyne, on Wednesday, October 1, 1823, after perambulating the romantic regions of Cumberland and Westmoreland with my friend, John E. Bowman, Esq. F.L.S. We had been told that he retired from his

work-bench on evenings to the “Blue Bell on the side,” for the purpose of reading the news. To this place we repaired, and readily found ourselves in the presence of the great man. For my part, so warm was my enthusiasm, that I could have rushed into his arms, as into those of a parent or benefactor. He was sitting by the fire in a large elbow-chair, smoking. He received us most kindly, and in a very few minutes we felt as old friends. He appeared a very large athletic man, then in his seventy-first year, with thick, bushy, black hair, retaining his sight so completely as to read aloud rapidly the smallest type of a newspaper. He was dressed in very plain brown clothes, but of good quality, with large flaps to his waistcoat, grey woollen stockings, and large buckles. In his under-lip he had a prodigious large quid of tobacco, and he leaned on a very thick oaken cudgel, which, I afterwards learned, he cut in the woods of Hawthornden. His broad, bright, and benevolent countenance at one glance bespoke powerful intellect and unbounded good-will, with a very visible sparkle of merry wit. The discourse at first turned on politics (for the paper was in his hand), on which he at once openly avowed himself a warm Whig, but clearly without the slightest wish to provoke opposition. I at length succeeded in turning the conversation into the fields of natural history, but not till after he had scattered forth a profusion of the most humorous anecdotes, that would baffle the most retentive memory to enumerate, and defy the most witty to

depict. I succeeded by mentioning an error in one of his works; for which, when I had convinced him, he thanked me, and took the path in conversation we wished. In many instances, I must remark, though frequently succeeding to the broadest humour, his countenance and conversation assumed and emitted flashes and features of absolutely the highest sublimity; indeed, to an excitement of awful amazement, particularly when speaking on the works of the Deity.

“ Thus happily situated, I paid little attention to the iron tongue of the neighbouring steeple of St. Nicholas, whether he *told* the long and loud ‘ hour o’ night’s black arch the keystane,’ or the wee bit ane ayont it. The fine old fellow, this jolly old Cock o’ the North, as I facetiously called him, would persist in seeing us to our hotel, where we renewed our libations even to “ sangs and clatter.” Very early in the morning he kindly came again with his great cudgel to our chambers; and removed us to his neat and hospitable residence amid the fields and gardens above Gateshead, on the opposite bank of the Tyne. Here we brokefast with his family, consisting then of his good old dame (who died February 1, 1826, aged seventy-two), one son, and three daughters. He now conducted us amid the curiosities of Newcastle, public buildings, pictures, and libraries; and, what is more to my present sketch, his own workshops. Here we saw his manner of producing his beautiful art; and his nests of almost numberless drawers, each filled with

one layer of finished blocks, with their faces upward, on many of whose maiden lineaments, fresh and sharp from the graver, the ink-ball had never been pressed. They are all cut on box-wood, which is procured from abroad of as large circumference as possible, at a great expense, and is paid for by weight. This is sawn across, at right angles to the cylindrical growth of the tree (I mean as a cucumber is sliced), in pieces, when finished, exactly the thickness of the height of the metallic types, with which the blocks are afterwards incorporated in the pressman's *form*, or iron frame. One surface of this block is made extremely smooth, on which is traced in black and white lines, the figure or design ; the white is then cut out, and the black left. Though this was the method he took with his pupils, of whom he had constantly a numerous succession, he had early acquired so ready a facility himself, that simply with the graver on little, and often no outline, he worked the design on the blank block at once. His tools, many of his own contrivance and making, were various in sizes and sorts. Some, broad gouges for wide excavation ; some narrow, for fine white lines ; and some many-pointed for parallels, which, either straight or wavy, he cut with rapidity, by catching the first tooth of the tool in the last stroke, which guided it equidistant with the former. He spoke with great approbation of the graphic talents of his late brother John ; and repeatedly said, that, had he lived, he might have attained to greater eminence than him-

self. When they both began, the art was almost lost, and totally neglected ; but has, through his hands and ingenuity, been almost, as it were, re-invented, and brought to its present high pitch o perfection : and many of the most celebrated wood-engravers have been his pupils. Here he gave us his opinion of the old method of cross-hatching, a style not now used, or even known, and he said useless ; as every effect may be produced by parallel lines, broader or narrower, at greater or less distances ; and in the lighter parts, by a little sinking of the surface of the block. The latter is one of his own inventions, and by it a judicious press-man can produce every gradation of shade from very black to nearly white ; between which he preferred those of intermediate strength, being decidedly against a black impression. He thought the old engravers effected the cross-hatching, either by covering the block or metal plate with wax, through which the lines were cut*, and an acid then applied to eat into the surface ; or by the use of cross or double blocks, requiring two impressions to produce a single figure. Numberless specimens of this cross-hatching may be found in the great old edition of Fox's *Book of Martyrs*, where it is often widely and wantonly thrown away, even where not required ; a proof, that it must have been executed without much art or labour : in honest old Gerard's

* This is a mistake ; Bewick must have meant that the lines representative of the figure were painted or hatched with any bituminous substance, and the interstices eat down by acids.

valuable *Herbal*: in that of Parkinson: and in Felix Valgrise's beautiful folio edition of Matthiolus' *Commentaries on Dioscorides*, Venice, 1583: and many other ancient books in my collection. Mr. Bewick's own Horse-traveller in a Storm, where he shows black and white rain, is a specimen of the use of two blocks. A person acquainted only with the common method would be at a loss to conceive how the union of the absolutely opposite styles of engraving, on copper and wood, could be effected. The black diagonal lines, particularly those on the foreground, constitute its great curiosity as a wood-cut. In many of his tail-pieces, he has given imitations of etching, and cross-hatching; but these are all worked in the usual manner, the surface of the wood being picked out, with infinite labour and surprising skill, from between the lines. He very seldom engraved from any other copy than nature, having the bird (always alive if possible), or other subject, before him, and sketching the outline on the block, filling up the foregrounds, landscapes, and light foliage of trees, at once with the tool without being previously pencilled. It was curious to observe his economy of box-wood; the pieces being circular, he divided them according to the size of his design, so as to lose little or none; and should there be a flaw, or decayed spot, he contrived to bring that into a part of the drawing that was to be left white, and so cut out. He said, blocks, in durability of lines, incalculably outlasted engravings on copper, which wear very much

in cleaning with chalk for every impression ; but editions of wood-blocks must be very numerous indeed before they show any feebleness. In early life he had cut a vignette for the Newcastle newspaper ; and this year it had been calculated that more than *nine hundred thousand* impressions had been worked off ; yet is the block still in use, and not perceptibly impaired. A faint impression therefore, is by no means to be attributed to the wearing out of the block but to the feebler pull of the pressman ; and this may be proved by observing that when any one is remarkably black or light, all that are pulled off that same *form* partake of a similar degree of strength or faintness. I have now in my library a copy, though, I am sorry to say, spoiled with my having written the margins all over with ornithological observations, of the very first edition of the *Birds*, in which many of the impressions are far feebler than the corresponding ones in the very last edition ; and in the same edition the same blocks vary in all shades. Let not collectors, therefore, yet despair, who have missed becoming purchasers in the rapid, and now, since the good man's death, more rapid sale of his valuable works.

“ At his table we had the pleasure of dining with several gentlemen of distinguished literary character, whom he had most politely invited on our account. After dinner, having largely enjoyed the full flow of his friends' conversation, and launched on its tide many a full and sunny sail of his own, our good host for a moment fell asleep in his elbow-chair ;

during which interval a gentleman narrated the following little anecdote, which, I find, my venerable friend's modesty has omitted in his own Memoir. The Duke of Northumberland, when first he called to see Mr. Bewick's workshops, was not personally known to my friend ; yet he showed him his birds, blocks, and drawings, as he did to all, with the greatest liberality and cheerfulness ; but, on discovering the high rank of his visitor, exclaimed, ' I beg pardon, my Lord, I did not know your Grace, and was unaware I had the honour of talking to so great a man.' To which the duke good-humouredly replied, ' You are a much greater man than I am, Mr. Bewick.' To which my friend, with his ready wit that never failed or offended, resumed, ' No, my Lord ; but were *I* Duke of Northumberland perhaps I could be.'

" A life of Bewick, without a word on his numberless and enrapturing VIGNETTES, would be the story of Aladdin without his lamp. He is the very Autolycus of tail-pieces, which he flings out faster and more profusely, in ribands of all ramifications, than a fire-eater at a fair ; ay, ' he utters them as if he had eaten ballads, and all men's ears grew to his tunes.' Do, reader, whatever be thy temperament, open any one of his books, and thou wilt touch a key accordant. Look at the boy-soldiers riding on gravestones, with rush-caps and swords of seg : the two hindermost blackguard ragamuffins, tattered and bare-legged ; the next a great awkward booby, son of some scoundrel attorney ; and the

captain, smallest of all, well clothed, and in good shoes and stockings,—he is the squire's son, whose hall is seen behind ; a pretty emblem of incipient aristocracy. Twenty years hence that little fellow will blow his twopenny trumpet among the Tories, and cry ' the church in danger ; ' the next rascal will bamboozle him out of his money, and the two villains behind poach in his covers. If thou lovest a good ghost story, as I do marvellously, look at the terrified thief, mistaking the stumps and grey *rampikes*; in the gloomy moonshine, for devils and horned goblins, with white wicker ribs and lanky skeleton arms. Wouldst thou know the cause of his terror ? look into the back-ground : he has just passed a gallows. I have heard a great painter say that Hogarth might feel proud of this piece.—Ha ! that is the murine phaeton, drawn by four cocked-tailed mice : Sir Whisker and Lady Mousellina with her parasol, of Mouse-COTTAGE ; their mouse footman, and the mouse arms are emblazoned with mouse supporters on the panel, in all the boast of mouse heraldry : they are going to make a call on Lord Frittertime and Madam Twaddle.—See how that heartless and coarse minded tanner grins a brutal laugh at the poor dog to whose tail the naughty boys have tied a tinned kettle : you may hear that it has just had a bouncing bang.—Those five methodists, listening to the call of their master, scarce occupy two inches ; yet look at their faces, male and female—special grace and election !!!—and were it not for the horns and claws of the

preacher, by his clerical attitude you might take him for a very parson.—Cast your eye on the gipsies and their bear; are not thief and harlot marked in their physiognomies? That first fellow's coat is too big for him, a world too wide; he has stolen it.—Look with luxury on the light and buoyant cutter, dancing on the dashing waves, in pursuit of the heavy smuggler, straining and creaking in the breeze, laboriously making off in the misty moonlight.—The lame man has left his crutch behind, having mounted the back of the blind, who has let go his dog: hasty attachments imagine friendship eternal.—That poor spaniel bitch has been howling all night, and has just broken her string, and found her drowned puppies: look at her sudden pause and sorrow!—Ay, friend Bewick, many a lobster handles a pencil, and piddles on a set palette.—Do stop your ears at opening to the two fiddlers, with their jangling discordant scrapings.—I truly pity their hearts who hear not the howling of that scalded dog who has overturned the pot; and the cackling of that hen who has just been laying.—Oh! what a feast of diverting and instructive amusement for an idle summer's day, or a long winter's night! What a rich and exhaustless succession of grotesque figures, funny groups, comical scenes, pithy inscriptions, delicious landscapes, village farmsteads, rocky caverns, tufts of fern, river glens and cascades, quiet pools and sedgy knolls, lovely trees and woody dells, towns and towers, ivied ruins, sea-side views, with sermons in every

stone; dreary snows, stormy waves, rolling ships, and screaming sea-fowl; quiet fountains, forest glades, and woodland solitudes; fairy haunts,

— ‘ Right seldom seen,
Lovely, lonesome, cool, and green.’

“ The commonest capacity might read a history in every one of these rich and romantic *tale*-picces. and a mind of wit and fancy may open to each. and feel arise from it the simultaneous power of delivering a bright or blooming narrative of melancholy or mirth. Thus the copious, capacious, and bountiful mind of Bewick, not merely content to fling around each bird and figure the most beautiful and appropriate scenery, but revelling in exuberance of imagination, drops, on almost every leaf, some gem of genius, ‘ to point a moral or adorn a tale.’ These fling on our sunny memories gleams and glances of nature, that impulsively shed on the feelings a delicate mental and bosom emotion, indicating the presence and influence (and probably constituting much) of that fine but indefinable power called genius; whence emanating on congenial dispositions, like rich tones on accordant vibrations, awaken, in successive combination, all the melodious harmonies of the heart.

“ In his *Memoir* he has detailed his sentiments on the purity of representation and free government, in a manner worthy the pen of a Bacon or Locke; a history of the art of wood-engraving; and observations on the progress of his own mind. Though

some of his less important opinions may, to persons who knew him not, appear but as whimsical fancies, they are the levities of a great and benevolent soul, that, like the brilliant air-bubbles of a deep clear fountain, rise playfully to the surface, without sully-ing its purity. The style is plain and simple, but sinewy and nervous, marking his character as much as his manners and even his dress, and is strongly tinctured, as was his conversation, with broad Northumbrian and Scottish provincialisms, which, particularly when he read it aloud, strengthened the efficiency. The narrative is replete with anecdote, especially in the earlier parts, wittily recorded and morally applied, and very much reminded me of that of the excellent Benjamin Franklin; indeed, to that good and great man, both in his religious and political sentiments, he appeared to bear a nearer resemblance than to any other. He was indefatigable and intrepid in his search after truth, dauntless and strenuous in the declaration of his matured sentiments, however opposite to received opinions, and fearless of any pains or penalties which the avowal of them might bring upon him from persecuting bigots. But the objects nearest to his heart were, to render the works of the Creator familiar to youth, by dressing them in their most alluring form, and thereby leading to the knowledge and admiration of their great Author, and to the principles of what he believed to be true religion, and what all believe to be those of sound morality. These were his constant aim and study, and to these

he considered every thing else as subordinate. The success of his labours in this field he acknowledged, but was unconscious of it till made aware by the voluntary and unsought admiration of the world. When the admired preface to his *Fables* first appeared, letters from eminent men poured in upon him, particularly from the University of Cambridge, and one from the Bishop of Gloucester ; numerous letters of thanks for the benefits he conferred on the rising generation, from men of talent and literary eminence, who were total strangers to him, except through his works, but who admired his modesty, his genius, his benevolence, his wit, his ingenuity, and his genuine religious principles.

“ Frequently, as I walked with him along the streets, it was gratifying to witness how much and how generally his character and talents were respected ; particularly when many who bowed to him differed totally from him in opinions, on a subject that ought to conciliate, but far too often sets little minds at inveterate hostility with great ones. An amiable touch of character showed itself in the many ragged children who followed him for halfpence, and would not leave him till he had imparted the customary largess. He turned to them several times, while he was talking to me, saying, ‘ Get awa’, bairns, get awa ; I hae none for ye the day.’ As they still kept dogging him, and pulling at his coat, he turned into a shop, and throwing down a tester, said, in his broad dialect (which he neither affected to conceal, nor pretended

to affect), ‘ Gie me sax penn’orth o’ bawbees ;’ and throwing the copper among the children, said kindly, and with a merry flourish of his cudgel, ‘ There, chields, fit yoursels wi’ ballats, and gae hame singing to your mammies.’ He was particularly fond of playing with little children, who, notwithstanding his bulky appearance, and extremely rough face, suffered themselves to come unto him ; and among the numerous and ill-sorted contents of his capacious pockets, he generally (like the all-hearted Dandy Dinmont) had an apple, a whistle, or a bit of gingerbread, together with pencil ends, torn proofs, scraps of sketches, highly tinted with the yellow ooze of huge pigtail quids, in divers stages of mastication.

“ Yet gentle, generous, and playful as he was, his personal strength and courage was prodigious : and notwithstanding his ardent feelings of humanity towards all animals, particularly dogs, horses, and birds, in defending many whereof he had drawn himself into scrapes ; yet, when his own safety was at stake, he could repel an attack with a vigorous heart and arm : for he told me, as how going into a tanyard, a great surly mastiff sprung upon him, and how he caught said mastiff by the hind legs, and ‘ fetched him, wi’ his cudgel, such a thwacker owre the lumber vertebræ, that sent him howling into a hovel.’

“ We enjoyed our evenings as may well be conceived, with such a host at our head ; often till broad morning began to spread her bright drapery

along the east ; and even the admonishing sun-beams to *keek* through the shutters, laughing out the candles. Be up as early as I could, I always, were the morning fine, found him walking briskly in his garden for exercise. His *ornithic* ear was quick and discriminative ; he one morning told me he had then first caught the robin's autumnal melody, and said we should have a premature fall of the leaf ; we had so, after the excessively hot summer of 1825. I had heard this robin as I lay in bed, feeble and infrequent ; and as we walked in the garden, a passerine warbler, *Sylvia hortensis* (whom, from his profusion of hurried and gurgled notes in May, I call the *Ruckler*), just gave a touch of his late song, which the fine ear of Bewick instantly caught, though in loud and laughing conversation. At meals he ate very heartily, and, after a plentiful supply, often said he could have eaten more. In early, and indeed late in, life he had been a hardish drinker ; but was at this time advised by his medical friends to be more abstemious, which he abode by as resolutely as he could, though not without now and then what he called a *marlock*. It has been said that Linnæus did more in a given time than ever did any one man. If the surprising number of blocks of every description, for his own and others' works, cut by Bewick, be considered, though perhaps he may not rival our beloved naturalist, he may be counted among the indefatigably industrious. And amid all this he found ample time for reading and conviviality. I have seen him

picking, chipping, and finishing a block, talking, whistling, and sometimes singing, while his friends have been drinking wine at his profusely hospitable table. At nights, after a hard day's work, he generally relieved his powerful mind in the bosom of his very amiable family ; either by hearing Scotch songs (of which he was passionately fond) sung to the piano-forte ; or his son Robert *dirl* hornpipes, jigs, strathspeys, and reels, which failed not to put life and mettle in the heels of the females and younger friends, to his glorious delight. Occasionally his fondling Jane would read Shakspeare to him, or the delightsome romances of Shakspeare's *congener* (not to speak profanely), Sir Walter Scott. It has been supposed by many, and publicly asserted by a few, that Bewick never wrote his own works, but was wholly and solely employed on the designs ; to this I have his positive contradiction, which would be enough ; but that in addition to his own MEMOIR, which I have read in his own MS., I have seen him compose, extract, and translate passages for each bird he has engraved while I was in his house. If his works have any great defect, 'tis the defect of omission ; every one laments he has given so little of the history of each bird. I have often offered him to re-write the whole of the birds wherewith from early and lasting habits I was well acquainted, their characters and manners, interspersed with anecdotes and poetry, particularly from good old Chaucer, the bard of birds, and passages of every bearing brought together, flinging over the whole

what may be called the poetic bloom of nature, in which none have so sweetly succeeded as honest White of Selborne. But this he always resolutely refused ; alleging that his descriptions, whether original, copied, or compared, were unimpeachably accurate ; and that was enough. And not only did he write his own language, but I often thought his talent in that department not surpassed even by the other effusions of his genius ; witness his unparalleled Preface to his Fables, and his other Introductions. He said, even to the last, he felt no deficiency of his imaginative powers, in throwing-off subjects for his *tale*-pieces (as I named them), which were always his favourite exercise ; the bird or figure he did as a task, but was relieved by working the scenery and back-ground ; and after each figure he flew to the tail-piece with avidity, for in the inventive faculty his imagination revelled.

“ Before I conclude this familiar account of my friend Bewick, you must, in justice, allow me to inform the public, that it was commenced, and (after its first portion) very considerably lengthened, at your request. Yet still, under the continual fear of dilation, I reluctantly omit innumerable incidents that are sparkling about the twilight of my memory, and hurry on to my last interview with my esteemed friend. Early in June 1827, he wrote to me from Buxton, that, for the gout in his stomach, he was hurried there by his medical friends, accompanied by his daughters Jane and Isabella. At sunrise I mounted the high-pacing Rosalind,

and entered that naked but neat little town early the second morning; alighting at the Eagle—fit sign to a visitor of the king of bird-engravers.

“ In my haste to find his lodging, I passed it; but stumping behind, with his great cudgel, he seized me ardently by the arm before I was aware, exclaiming, ‘ I seed ye from tha window, and kenned yer back and gait, my kind friend.’ I found him in very good lodgings facing the fountain-corner of the superb Crescent, nearly opposite the Old Hall; and, after the fervid raptures of again meeting, we settled down into our usual chit-chat. There were three windows in the front room, the ledges and shutters whereof he had pencilled all over with funny characters, as he saw them pass to and fro, visiting the well. These people were the source of great amusement: the probable histories of whom, and how they came by their ailings, he would humorously narrate, and sketch their figures and features in one instant of time. I have seen him draw a striking likeness on his thumb-nail, in one moment; wipe it off with his tongue, and instantly draw another. He told me that, at watering-places, if his name were known, he was pestered with people staring at him, and inflicting foolish questions; and he cautioned me always in public to call him the ‘ old gentleman.’ We dined occasionally at the public table; and one day, over the wine, a dispute arose between two gentlemen about a bird; but was soon terminated by one affirming he had compared it with the figure and description of

Bewick, to which the other replied that Bewick was next to Nature. Here the old gentleman seized me by the thigh with his very hand-vice of a grasp ; and I contrived to keep up the shuttlecock of conversation playfully to his highest satisfaction, though they who praised him so ardently, little imagined whose ears imbibed all their honest incense. On evenings we often smoked in the open windows of his pleasant lodgings, and chatted in all the luxury of intellectual leisure. A cocky wren ran, like a mouse, along the ledge of the window. ‘ Now,’ says he, ‘ when that little fellow sings, he sings *heartily!*’ Upon which the merry little creature, as if conscious of our conviviality, and of who heard him, perched on a post, and trilled his shrilly treble with thrilling might and main. Of nights we had music, the young ladies sang, or we read marvellous or merry ballads, or again relapsed into our pleasantries ; fully agreeing with the piquant and pithy Venusian poet, that fun is no foe to philosophy, to mix short sallies with our serious discourse, and nothing so sweet as to play the fool when fitting.

‘ Misce stultitiam consiliis brevem
Dulce est despere in loco.’

“ Of Lord Byron’s poetry he spoke with great disgust, saying, it teemed with less imagination, and more trash, in any quantity, than that of any other great poet ; that power was the prominent feature of his mind, which he prostituted ; and the great failing of his heart was depravity, which he adorned.

He thought the romances of Sir W. Scott breathed very large and frequent aspirations of the genuine essence of poetry ; that his landscapes and figures were spirited and highly coloured painting, and his real characters the finest specimens of historical portraits. Paradise, he said, was of every man's own making ; all evil caused by the abuse of free-will ; happiness equally distributed, and in every one's reach. ‘ Oh ! ’ said he, ‘ this is a bonny world as God made it ; but man makes a packhorse of Providence.’ He held that innumerable things might be converted to our use that we ignorantly neglect ; and quoted, with great ardour, the whole of Friar Laurence’s speech in *Romeo and Juliet*, to that effect. In corroboration of this, one day, at the mouth of Poole’s Hole, which, on account of the chilly damp and dripping of the cavern, he declined to enter with me and the young ladies ; while we were exploring the strange and fantastic formations of calcareous tufa therein, the *Flitch of Bacon*, the *Saddle*, and *Mary Stuart’s Pillar*, (which, it is said, she went quite round when a prisoner at Chatsworth), I found, on our emerging, he had collected his handkerchief full of nettle-tops, which, when boiled, he ate in his soup, methought with very keen relish. It was on our walk back, for some joke I cracked, they promised me a collection of all his engravings on India paper, which, at the time, I thought a joke too ; yet, valuable and expensive as was the promise, I, in due time, found it faithfully and affectionately performed.

“ I had never parted from him without our reciprocally thinking it would be the last ; but this time we both thought otherwise, for his health was very much ameliorated. Black Monday at length came ; and though the sun shone broad on every thing around, they walked slowly, and methought strangely silent, with me (I leading Rosalind, heavy as a nightmare), about two miles on the road, where, after saluting the young ladies, and shaking the good old Bewick’s hand, though I hope to enjoy *their* friendship yet many years, it was on that mountain side that with *him* I parted for ever ; and looking back, till the road turned the corner of a rock, dimly saw them kindly gazing after me : and this was the last time I ever beheld the portly person of my benevolent and beloved friend. We continued, however, to correspond frequently ; not only on natural history, but (as the Irish scholar said) ‘ *de omnibus rebus, et quibusdam aliis*,’ on the manners of both feathered and unfeathered bipeds. The next summer, he visited London about his works ; and thence he wrote me several very humorous letters on the utterly artificial life of the cockneys ; with the mass of whom, since he was among them half a century before, he thought *the march of intellect* had not equalled *the march of impudence*. He was, however, very honourably received by many learned societies and individuals, of whom, and of whose collections, he wrote in raptures. On his return, the London and provincial papers had many paragraphs respecting this visit,

his reception, and his life ; to amend the errors of which statements, I must have been writing one at the very hour of his death ; for I had not time to stop its insertion in one of the Shrewsbury papers, when I received a short, but most affectionate and affecting letter from his son, informing me, ‘ as his father’s most valued friend,’ that he expired, in full possession of his fine and powerful mental faculties, in quiet and cheerful resignation, on the 8th of November, 1828. On the morning of his death, he had the satisfaction of seeing the first proof-impression of a series of large wood-engravings he had undertaken, in a superior style, for the walls of farm-houses, inns, and cottages, with a view to abate cruelty, mitigate pain, and imbue the mind and heart with tenderness and humanity ; and this he called his last legacy to suffering and insulted Nature.”





LACEPÈDE.

Engraved for the Naturalist's Library.

MEMOIR
OF
M. LE COMTE DE LACÉPÈDE.

AS LE COMTE DE LACEPEDE was the author of that elegant and classical work on the Cetacea, which for so many years has been the most popular treatise on the subject, we have thought that we could not submit to the attention of our readers a more appropriate biographical memoir than a brief sketch of this very illustrious and most amiable man.

BERNARD-GERMAIN-ETIENNE DE LA VILLE was born at Agen on December 26, 1756. He was descended from a long line of honourable ancestors ; and his father, Jean Joseph de La Ville, was lieutenant-general of Senechausée. Lacépède, however, did not value himself on his extraction, but entered life with the determination of exhibiting his birth only by the urbanity of his manners and the uprightness of his conduct. This resolution he maintained with the most scrupulous uniformity throughout his chequered history ; his politeness was proverbial,

whilst it was universally acknowledged that he was as obliging as he was polished, and that he did not more indulge in compliment than in rendering important services, and in bestowing substantial favours. His father superintended his education with great care, and received valuable assistance from M. de Chabannes, the Bishop of Agen ; and it was remarked that during his younger years the idea of a bad author or of a wicked man scarcely presented itself to his mind. When twelve years of age, as he himself stated, he imagined that all poets resembled Corneille and Racine, that all historians were like Bossuet, and all moralists like Fénélon. He had thus from his earliest years a great leaning to optimism, and would scarcely believe that any one was actuated by bad feelings or intentions, or that any one wished to deceive ; and this prepossession had great influence over his conduct and writings, as well as on his social habits.

Buffon's *Natural History* was one of those books which was early put into his hands, and it instantly became a favourite ; it was the companion of his walks, and that in one of the finest countries of the world. It was on the beautiful banks of the lovely valley of the Garonne, in the neighbourhood of those smiling hills which are so majestically terminated by the peaks of the Pyrenees that he studied the eloquent pictures of this great writer : his passion for the beauties of Nature thus originated at the same time with his admiration for that great painter who pointed them out to his contemplation, and these

two sentiments always remained united in his mind. He took Buffon for his master and his model, and read him till he almost knew him by heart.

About this time the love and cultivation of music not less strongly took possession of his mind. His father and many of his near relatives were musicians, and he often joined their concerts. This art afforded him inexpressible delight, and became to him a second language, which he could write and speak with equal facility. Both the airs which he composed, and the mode of his execution generally, were greatly admired. He was often requested to compose, and ere long he engaged in the laborious task of an opera; this introduced him to the acquaintance of the celebrated Gluck, who greatly admired and cherished his genius.

Natural philosophy also, at this time, formed an object of his pursuit. At the age of thirteen he formed, with some of his school-fellows, a juvenile society, several members of which subsequently became members of the Institute. Their investigations became more important as their years advanced; and electricity and magnetism, among other subjects, engaged their attention. Lacépède having made some experiments, and deduced conclusions, which appeared new to him, he transmitted them to Buffon, who noticed them in the supplements of his work.

At the age of twenty-one, Lacépède resorted to Paris, where, on his arrival, he made the formal acquaintance of his correspondents, Gluck and Buf-

fon, by both of whom he was received in the most flattering manner. He closed the day, as he began it, in a kind of enchantment ; he spent the evening with his relative, the Archbishop of Lyons, where he met with the *elite* of the academicians, and from that time he determined to devote himself to science and to music. This resolution was scarcely approved by his family, whose interest might have advanced him in the army, in the diplomatic line, or at the bar. In these circumstances, a German prince, whose acquaintance he made in Paris, offered to procure him the brevet rank of colonel in one of the smaller states. This appointment led him to pay two short visits about this time to Germany, where he acquired his nominal rank, with his uniform and epaulettes ; and his friends being thus satisfied, he was allowed henceforward to follow the bent of his inclination.

Lacépède now devoted some years very assiduously to music. He composed an opera, which, after being on the eve of performance, was from some trifling occurrence suppressed. In 1785 he published a work, in two octavo volumes, *La Poétique de la Musique*, which procured him many admirers, among whom the great king of Prussia, Frederick II. was one, and Sacchini another.

Shortly afterwards, Lacépède published two works on physics ; one on *Electricity*, and the other entitled *Physique Générale et Particulière*. Neither of them, though both written with eloquence, procured the commendation of competent judges ; and, after

the lapse of a few years, he was so convinced of their imperfection, that he used his best exertions to suppress them.

At this time, Buffon very opportunely opened up a way by which the Count might usefully exercise his talents. He proposed that he should continue that part of his work on Natural History which treated of animals; and that he might do so with the greater advantage, he offered him the situation of under-demonstrator of the *Cabinet du Roi*, which had been just vacated by the younger Daubenton. Lacépède gladly accepted these proposals, and though some of the attendant duties were somewhat menial, he discharged them with the greatest assiduity. He attended in the museum on public days, and with his accustomed politeness answered the inquiries of the curious, whether poor or rich. To many this task might have been disagreeable, but he did it to please a beloved master, and to fit himself for being his successor, and these ideas ennobled every thing.

In 1788, some months before the death of Buffon, Lacépède published the first volume of his History of Reptiles, which comprehended the oviparous quadrupeds; and the following year, the second, which treated of Serpents. These quartos, by the elegance of their style, and the interest of the numerous facts they embodied, were judged worthy of the great work of which they formed the continuation. He established classes, orders, and genera, and accurately characterized these divisions; he enumerated

and named the species with care, and as methodically, though not so philosophically, as Linnæus himself. He also described a great number of new species, raising the number to two hundred and eighty-eight.

But at this epoch, a great change took place in the prospects of the young Naturalist, by the occurrence of those great events, which overturned every thing in France at the Revolution. Power then became the daily product of popular favour, and every month saw some great reputation fall, and some unknown and worthless person start from obscurity. Many of the celebrated men in France were at that time invited and drawn in to take a part in those agitating transactions, and Lacépède, from his great popularity, had peculiar difficulty in avoiding them. He was successively chosen president of his section, commander of the national guard, extraordinary deputy of Agen to the *Assemblée Constituante*, member of the general council of the department of Paris, president of the electors, deputy of the first legislature, and president of that assembly. In all these situations he attempted to act with his habitual kindness; but that was a sentiment with which, ere long, there was no general sympathy. One morning, Lacépède saw his name at the head of an article in the newspaper entitled, “list of the *Scelerats* who vote against the people.” He had been, and still was slow in thinking that matters would come to extremities, or that there was any general risk of personal safety; and the good

opinion he entertained of mankind was too deeply rooted to allow him to suspect that truth and justice would not immediately resume the ascendancy. But, in waiting their return, his friends saw he was exposing himself to imminent danger ; and, almost by main force, they removed him from the capital. He had not been long in the country till he longed to return, and he imagined that nothing would be more simple than to demand permission from Robespierre. Happily the monster had that day a spark of humanity about him, “ He’s in the country ? —he demanded : Tell him to stay there.” It is certain, an hour’s residence in the metropolis would have been fatal to him ; his retreat was searched for ; and he could not venture to return to Paris till after the 9th of Thermidor.

He returned with a singular title for a man of forty, who was already known by so many eminent works ; it was that of a scholar of the Normal school. The convention, at last giving up its cruelties, imagined it might create as speedily as it had destroyed ; and that, for the re-establishment of general education, it might in a few weeks educate masters with the help of a few celebrated men, who would only require to point out to them the best methods of proceeding. Fifteen hundred individuals were sent, with this object in view, from the departments. M. Lacépède found himself on the same bench with the celebrated Bougainville, a septuaginarian, and a general officer, equally famous as a writer and a mathematician ; with the grammarian,

Wailly, who had been esteemed as a classical author for forty years, and with Fourrier. La Place himself, and this is saying much, appeared in this strange scene as a scholar; and it was by the side of such men as these, that there were seated peasants who could scarcely read. The influence of these great men was soon felt in society, and was highly useful in the metropolis.

Lacépède, after his retirement, was not legally a member of the establishment of the *Jardin des Plantes*, but scarcely was his name allowed to be pronounced in Paris, when those who had been appointed in his absence, urgently invited him to associate himself with them. For this purpose a new chair was appointed for him, connected with the history of Reptiles and Fishes. His lectures were most successful. A crowd of young men flocked round him, who, for three or four years, had been deprived of all instruction, and who were thus as it were famished. The politeness of the professor, the elegance of his language, the variety of the ideas and knowledge which he displayed, after so long an interval of barbarism, introduced as it were another and a better age. Then it was especially that Lacépède assumed, in the public estimation, the rank of the successor of Buffon; as in him, in truth, were found many of his distinguishing characteristics: he possessed the same art of giving interest to the driest details; and when Daubenton was approaching the termination of his career, the new professor remained the only re-

presentative of that great association which had laboured so successfully in the popular field of Natural History. It was on these accounts he was called upon to form a part of the nucleus of the *Institute*, and was thus one of those who were charged with the restoration of the *Academie des Sciences*. He was also one of its first secretaries, and his beautiful *éloge* on Dolomier makes it a matter of regret that he was raised to higher posts, from a situation which he would have filled better than any one else. This statement comes at least with as much grace as truth from the lips of Cuvier; who, in the discharge of the duties of the same office, pronounced the *éloge* of his predecessor.

Of all the occupations in which M. de Lacépède had been induced to engage, the sciences alone, as is usual, remained faithful to him in the time of misfortune, and it was with them he consoled himself in his retreat. Resuming the habits of his youth, passing the day in the midst of the woods or on the banks of the rivers, he traced his plan of his Natural History of Fishes, the most important of his works. Immediately after his return, he commenced its composition; and at the end of two years, in 1798, he found himself in a condition to publish the first volume. Five volumes appeared in succession, the last in 1803. All that he could collect regarding the organization of these animals, their habits, the wars which the human species wage against them, and the benefit derived from them, he has given in a pure and elegant style; he

has even diffused a charm over his descriptions, whenever the beauties, which have been imparted to them in so high a degree, permitted their being presented to the admiration of naturalists. "And in fact," says Cuvier, "what can afford a greater subject of admiration, than those brilliant colours—that glare of gold, steel, ruby, and emerald, profusely poured upon beings which man scarcely ever naturally meets with, and which are almost never seen in the obscure paths they frequent. Even at the present day (in 1826), there is no work on the history of fishes superior to Lacépède's, and he is always quoted on the subject: when the immense materials collected in these latter days shall have been put together in another work, the brilliant pieces of colouring, full of sensibility and deep philosophy, with which he has enriched his Work, will not be forgotten. Science, from its nature, is every hour advancing; but the great writers will not remain the less immortal."

The Natural History of Fishes was followed, in 1804, by that of the Cetacea, which terminates the great system of vertebrate animals. M. de Lacépède considered it as the most perfect of his Works; and in fact, he treated the historical and descriptive part, that referring to the organization and methodical characters, better than any one had done before him. His style also rises in some manner in proportion to the grandeur of his subject. He augments, by about a third, the number of the species. "This author," says Mr. Scorseby, "has published the most

voluminous and pleasing account of cetaceous animals that has ever appeared from the press." He adds, " the style is animated and poetical, and his history is a most interesting work ; but the interest, in many cases, is augmented at the expense of truth ; it is by no means accurate." (Artic. reg. i. 447—9.) Perfectly agreeing in this criticism, and ascribing the many inaccuracies to the imperfect state of this very difficult branch of science at the time of the publication, we deem these few words sufficient to put our readers on their guard, in their perusal of this interesting production.

After this time M. Lacépède undertook a work somewhat different in its character ; more philosophical, and less liable to become antiquated by the rapid progress of science. He designated it a *History of the Ages of Nature*, in which he comprehended that of man,—considered in his individual developement, and in that of the race. The article *Homme*, in the *Dict. des Sciences Naturelles*, is a sort of programme of what he contemplated on the physical history of our race. The romances which he wrote,—*Ellival* and *Caroline*, and *Charles d'Ellival et Alphonsine de Florentino*,—and published about this time, were considered by him as *studies* upon man's moral history. But it was soon apparent that in the midst of these meditations the gradual developement of social life had the most especial charms for him, and the naturalist gradually merged into the historian ; he dwelt chiefly upon the political and religious establishments

which have appeared since the fall of the Western Empire. He left a history of them completed, and several volumes of this work have now been published.

Besides these greater works, we find that M. Lacépède transmitted no fewer than twenty-three memoirs to the several societies of which he was a member, and to the respectable periodicals of the day, principally between the years 1796 and 1808 ; the last, *On the Cetacea of the Japanese Seas*, was in the year 1818. He also published in 1799 a new edition of Buffon in fifty-two volumes duodecimo, and wrote the preface to the *Menagerie*, in folio, in 1801.

We must now add, that about this period he made another change from these active literary pursuits to equally active political engagements. Very soon after the new government was established, he was gradually replaced in all the high offices he had previously held. He was appointed senator in 1799, president of the senate in 1801, chancellor of the legion of honour in 1803, and minister of state in 1804.

In the general administration of the legion of honour, M. Lacépède conducted himself with the greatest talent and address, and to the satisfaction of every one. He likewise exerted himself in establishing schools for the education of the orphans of those who had belonged to the legion, and procured comfortable accommodation for as many as nearly fourteen hundred of them.

Lacépède conducted the multifarious affairs in which he was engaged with a facility and rapidity which astonished all who were cognizant of it. For him one or two hours were sufficient to determine every thing, and with a most intimate knowledge of all the circumstances. This amazing rapidity surprised even Napoleon, who himself was much celebrated for despatch of business. One day this great man asked him, by what secret he did so much? to which the other replied,—“I use the method employed by naturalists;” an answer, which under the appearance of pleasantry contains much truth.

Another circumstance which much struck his imperial master, and which he but rarely witnessed, was the extreme disinterestedness of Lacépède. This servant of the public would at first receive no salary; but, as his benevolence kept pace with his disinterestedness, his patrimony was soon exhausted, and much debt was contracted, which there was no prospect of his being able to pay. Under these circumstances, the head of the government insisted upon his taking a regular salary, and ordered that all his arrears should also be paid up. The sole advantage which he derived from this act of kindness and justice, was, that it enabled him to increase his donations. He considered himself accountable to the public for all that he received; and, as he every day had occasion to see poor legionaries, and many of their widows, without any means of subsistence, he had ever before him those who were

objects of his bounty. His liberality usually anticipated their requests, and he often allowed them to suppose that his private charities flowed from the public funds. Much he bestowed without the recipients knowing whence it came. A gentleman who held a high office, having ruined himself by speculation, abandoned his family, and Lacépède caused 500 francs per month to be regularly transmitted to his wife, till her son was old enough to support her; and this lady always imagined she received her income from her husband.

A young man who was employed in one of the offices under his controul, appeared depressed and ill. The Count supposed there was some latent cause of anxiety, and employed his physician to discover what it was. Having learned that the young man's circumstances were hopelessly embarrassed, he immediately sent him 10,000 francs: the gentleman hastened to him with tears in his eyes, intreating him to fix the terms of reimbursement;—“My friend,” he replied, “I never receive any thing of that sort.”

What rendered his disinterestedness in every degree conformable with his munificence, was the fact, that he had very few personal wants. He had no expenses but what were required by the situations which he held. He never possessed more than one suit at a time. After dressing in the morning he never changed throughout the day. His diet was as simple as his clothing. From the age of seventeen he never drank wine, and a single and

very slight repast was all he required. But what was most surprising, was the small quantity of sleep he took ; he usually slept two or three hours, and the rest of the night was employed in composition, his memory retaining all the phrases and the very words ; they were as if written in his brain, and early in the morning he dictated them to his secretary. He has stated, that in this way he could retain whole volumes ; could change them as he saw fit in his mind, and remember what he had thus corrected, as accurately as the original text. It was thus that nearly the whole day was free for business, for his public duties, and especially for the sweets of the family circle : for his external life, so to speak, however brilliant, was to him nothing in comparison with his domestic enjoyments, in which he ever found a delightful solace for all his fatigues and trials. His attachment to his wife, Anne Caroline Jubé, was beyond all praise ; of which a satisfactory proof may be found in the impassioned language of the introduction to the *Cetacea* : “ After I had commenced this work, misfortune felled me to the ground, and lacerated my heart ; I lost my beloved companion. Grief without hope,—gratitude,—veneration,—have inscribed the name of *my Caroline* on the dedication of my work on fishes ; and again in this work ; and they will consecrate all those I may undertake, till the end of my fearful banishment ! Her name, which is dear to every virtuous and tender heart, will recommend my feeble efforts to the lovers of nature.” (*Le 24 Nivose, An. 12—1804.*)

Many years afterwards he lost his only daughter, the wife of his adopted son ; and immediately after this shock, he was himself seized with the small-pox. In this last illness, almost the only one he had experienced during a life of seventy years, he continued remarkably to exhibit how much amiability and unalterable politeness were inherent in his nature. Not a word escaped him to show his sense of danger, though he apprehended death from the first moment of his seizure. He died on the 6th of October, 1825.

On the day of his funeral, the crowd, many of them unfortunate and miserable, who came to weep over his tomb, was the best proof of his liberality and benevolence : and these virtues are not less distinctly proclaimed by the fact, that, after having long filled the most eminent situations, and having enjoyed, for ten years, the especial favour of the great Arbiter of Europe, the fortune which he left was much less than that which he had inherited from his father.





LAMARCK

Engraved for the Naturalist's Library

MEMOIR OF LAMARCK.

AMONG the many eminent French naturalists, whose loss to science we have so often had occasion to lament during the few past years, the above individual occupied a conspicuous place. He was long known in Paris by his public prelections, and his numerous writings have procured for him a high degree of reputation throughout Europe. In this country he is best known by his admirable works on invertebrate animals, which may be said to have formed a new era in the history of that extensive department of the animal kingdom. But his studies had a very extensive range; many of the most interesting inquiries which for ages have fixed the attention of mankind, were the subjects of his meditation, and on most of them he formed a number of definite ideas which he promulgated under the form of theories. Although these speculations are of a highly fanciful description, and some of them greatly to be deprecated on account of their hurtful tendency, yet they merit attention as the productions of a mind remarkable for originality

and penetration, as well as for extensive and varied knowledge.

JEAN BAPTISTE PIERRE ANTOINE DE MONET, generally called the Chevalier de Lamarck, was descended from an ancient family of some distinction, possessed of considerable property in the province of Bearn. He was born at Bezantin, a small village in Picardy, on the 1st August, 1744. His father's pecuniary resources having become considerably impaired, among other things by the maintenance of a numerous family, Jean Baptiste being his eleventh child, he found it necessary to educate his sons for some useful profession. Several of them entered the army, and the subject of the present notice was destined for the church, which at that period offered many lucrative and influential appointments to the members of noble families. To qualify him for this office, he was sent to study under the Jesuits at Amiens, with whom he remained for a considerable time. From the first, however, he appears to have had some aversion to the profession selected for him by his father, and this was increased to positive dislike by the mode of life which he was obliged to lead at college. His active and excursive mind submitted with impatience to the punctilious restraints of college discipline, and the mechanical routine of studies prescribed indiscriminately to all, without reference to natural bias or acquired predilection. Most of his companions were actively engaged in the field or in other public services, for

France was now occupied with the eventful struggle which commenced in 1756. His eldest brother had fallen in the siege of Bergen-op-Zoom ; others of them were still in the army ; and all his most cherished associations were connected with the profession of arms. With so much to inspire an aversion to seclusion and comparative inactivity, nothing could have induced him to remain at college but the authority of his father, who still enforced compliance with his wishes. That salutary restraint, however, having been removed by death, in 1760, no time was lost by young Lamarck in following his own inclinations. With nothing but a letter of recommendation from a lady residing in the neighbourhood of his father, addressed to the colonel of a French regiment, he set out for the army, which was then in Germany. Lamarck's somewhat diminutive stature and boyish appearance, which made him look younger than he really was, were ill fitted to make amends for the want of influential patronage. His reception was by no means flattering, but nothing could daunt the zeal of the young volunteer. He joined a company of grenadiers, and determined to trust to fortune and his own exertions for obtaining that rank which individuals of his birth and education commonly acquire by other means.

Zeal like this seldom fails sooner or later in attaining its object, and in the present instance it was speedily rewarded. Lamarck had joined the army on the day preceding the battle of Fissingshausen, in which a vigorous but unsuccessful

attack was made by the combined troops of the marshal de Broglie and the prince of Soubise, on the army commanded by Prince Ferdinand of Brunswick. Cuvier relates*, that in the vicissitudes of the contest, the company to which M. Lamarck was attached happened to be thrown into such a position as completely exposed it to the fire of the enemy's artillery, and that, owing to the confusion which took place in the French army, it was entirely forgotten and left in that perilous situation. All the officers were soon killed, as well as the greater number of privates, when an old grenadier, perceiving that there were no longer any of the French within sight, proposed to the young volunteer, who by the death of the officers had unexpectedly acquired the temporary command, that the little troop should be withdrawn. This, however, he resolutely refused to do until he received regular orders to that effect, which at last were dispatched, when the troop were discovered to be missing, and reached him with the utmost difficulty, owing to the rapid advance of the enemy. This instance of intrepidity and vigorous adherence to orders gave so much satisfaction to the commander-in-chief, that he instantly issued an order for Lamarck's promotion. Some time afterwards, he was nominated to a lieutenancy, and his warmest anticipations

* See his *éloge* on Lamarck, of which a translation will be found in the Thirty-ninth Number of the Edinburgh New Philosophical Journal. To this memoir we have been chiefly indebted for the particulars of Lamarck's life.

of success, in a profession which he had made so many sacrifices to embrace, promised in time to be realized. But these prospects were speedily overclouded by an accident which completely put a stop to his military career, and gave a different complexion to the whole tenor of his life and habits. Some one of his companions, in sport, had lifted him by the head, and thereby strained so severely the glands of his neck, that he was for some time placed in the greatest danger. After many remedies had been tried to no purpose, a cure was at last effected by the celebrated M. Tenon, by means of a complicated operation. But his health had by this time become so much impaired, that after residing for a length of time in Paris in the hope of its amendment, he found it necessary to abandon all intention of rejoining the army.

In these circumstances it became necessary for him to think of some new occupation, and he seems not to have been long in forming a resolution to study medicine. His pecuniary circumstances, however, were so very limited, consisting of a pension of only 400 francs, that he was obliged in the mean time to employ himself as a clerk in the office of a banker in order to obtain the means of daily subsistence. The intervals he spent in study; and such were the buoyancy and activity of his mind, that even when his prospects were most discouraging, he never seems to have lost the expectation of rising to usefulness and distinction. He reverted with eagerness to the physical studies which he had

commenced at college, and soon showed a preference for certain departments of natural history. He delighted to engage in controversial discussions on these subjects with his companions, and to indulge in speculations respecting the most abstruse points in physics and the phenomena of the natural world. It is not improbable that it was about this time, when the wide and varied fields of science were just beginning to open to his view, that he conceived some of those crude and fanciful notions which characterise so many of his theoretical views. It is less a matter of surprise that such ideas should suggest themselves, at the outset of his career, to one of his ardent temperament and lively imagination, than that he should have persisted in maintaining them when his knowledge was more extended and his judgment matured, although in the opinion of almost every other person their fallacy appeared demonstrable.

Botany and meteorology were the branches on which he first bestowed the greatest degree of attention. Even before he left the army, he had become attached to the former; and during his stay at Monaco, had examined the singular vegetation of that rocky country. During his illness, he was lodged, for the sake of economy, in an apartment at the top of a high house, from which the clouds formed almost the only spectacle; and to relieve the tedium of his long solitude, he was accustomed to watch their varying forms and aspects, and carefully to observe all the other atmospheric pheno-

mena, indulging his fancy in forming conjectures about their nature and origin. This circumstance, he himself states, first inspired him with a desire to study meteorology; and we can perceive in these solitary meditations, one of the causes which tended to give their fanciful complexion to many of his subsequent speculations.

After continuing his physical studies with much ardour for several years, he at length appeared in the character of an author. His "French Flora, or a brief Description of all the Plants which grow naturally in France," was published in 1778. The immediate occasion of this work was a desire to furnish his fellow-students with a system of arrangement which should lead with greater ease and certainty to the determination of plants than any then in use. For this purpose he adopted a modification of the binary or dichotomous method, the principle of which consists in arranging natural objects by their positive and negative characters, dividing and subdividing always by two, and allowing a choice only between two opposite characters. Although this plan is, of course, highly artificial, and ill calculated to throw light on the affinities and analogies of objects, yet it is much recommended by its extreme simplicity, which adapts it to the comprehension of those who have but little acquaintance with the technical and descriptive language of natural history. If judiciously applied, it affords an easy index to particular genera and species, and renders the subject at once accessible without any

preparatory labour. Indeed, the principle on which it rests must to a certain extent be implied in every artificial system of arrangement.

This work soon acquired a considerable degree of popularity, not only by its intrinsic value, but from the seasonable time of its appearance. The study of botany, which had hitherto been confined almost exclusively to the members of the medical profession, was now becoming a popular and even fashionable pursuit; a distinction which it owed chiefly to the writings and example of J. J. Rousseau. Every work, therefore, calculated to facilitate the study, was likely to meet with a favourable reception among those who would probably have been repelled by dry technical details and rigorous scientific precision. Its publication had an important influence on Lamarck's fortune and prospects. It secured for him the friendship and patronage of M. de Buffon, who was then in the height of his popularity, and possessed of much influence, not only from his rank, character, and celebrity, but also from his authority with the government. Even its want of a very philosophical and precise system was probably one of the circumstances that recommended it to Buffon's attention, as it was thereby assimilated to his own writings, from which every thing of that nature was expressly excluded. Through his influence, an edition of the work was printed at the royal press, and its author introduced to the favourable notice of many of the leading savans of the day. He had soon an opportunity of turning his popularity to

some profitable account, for a place happening to become vacant in the botanical department of the Academy of Sciences, Lamarck was presented with the appointment, in preference to others of older standing and much higher pretensions. He thus acquired a certain status among men of science, which encouraged him to prosecute the studies which he had so successfully begun, and at the same time afforded him the means of doing so in a more efficient manner.

Another important advantage was derived by Lamarck from the friendship of M. de Buffon. When the son of the latter had completed his studies, and was about to make a tour through various parts of Europe, Lamarck was invited to accompany him as tutor; and in order that he might enjoy greater privileges by appearing in a kind of official character, Buffon procured for him a commission as botanist to the king, for the purpose of visiting foreign gardens and cabinets, and opening a correspondence between them and similar establishments in Paris. In this double capacity he travelled through various countries in the year 1781 and 1782; visited Gleditsch at Berlin, Jacquin at Vienna, Murray at Gottingen, and many other celebrated naturalists; greatly extending his acquaintance, not only with botany, but with many other branches of natural history.

The extent and accuracy of his botanical knowledge was evinced by the important works in which he engaged shortly after his return, which have

conferred on him a high reputation in this department. These consisted of voluminous contributions to the *Encyclopédie Methodique*, forming a *Dictionary of Botany*, and an extensive series of *Illustrations of Genera*. Of that portion of the Encyclopædia known by the former name, Lamarck wrote the whole of the two first volumes, and a part of the third, fourth, and fifth. The object of the work is to give a detailed history of plants, accompanied with descriptions, remarks on their synonymy, an account of their uses, and peculiarities of their structure. The Illustrations profess to afford “an exposition of the characters of all the plants established by botanists, arranged according to the sexual system of Linnaeus, with figures displaying the characters of these genera, and a table of all the known species referable thereto, the description of which is found in the Botanical Dictionary of the Encyclopædia.” This laborious work contains no fewer than two thousand genera, illustrated by half that number of quarto plates, executed with great care, and generally representing one or two of the typical species, with a view to afford a knowledge of their general appearance and habit. The flower and parts of fructification are carefully delineated, and the precision and accuracy of the whole work, renders it one of the most valuable that can be named for conveying a speedy knowledge of the extensive and interesting subject of which it treats. The zeal with which Lamarck laboured to produce works of such research and interest, is characteristic

of the temperament of his mind. He seems for a time to have allowed the subject wholly to engross his thoughts ; to have occupied himself with nothing but plants, and to have associated almost exclusively with botanists. He was a frequent visitor at the house of M. de Jussieu, whose celebrity drew around him all who devoted themselves to this branch of science. Whenever a new collection of plants arrived in Paris, Lamarck was the first to inspect it ; and when the celebrated Sonnerat returned from India in 1781, he was so much pleased with Lamarck's enthusiasm, as contrasted with the comparative indifference of most other naturalists, that he presented him with the magnificent herbarium which he had made in the east. It is to zeal like this that we are entitled to look for the achievement of the highest results in science.

Notwithstanding the patronage of Buffon, and others having the greatest influence with the government, it was long before Lamarck succeeded in obtaining any permanent and lucrative appointment. His chief dependence was on the casual and precarious engagements which he formed with booksellers, according to whose direction he was obliged to labour ; a painful restraint to a man of genius, impatient to develope his own conceptions in whatever way he judged best fitted to render them effective. He was at length nominated by M. de la Billardiere, a relation of his own, to a place which seems to have been created expressly for him, by which the duty was assigned him of keeping the herbaria in

the king's cabinet. Although the emolument arising from this office was inconsiderable, and the tenure of it uncertain and invidious, for the National Assembly were called upon to suppress it as unnecessary, he continued to hold it for several years, till a change occurred which opened new prospects and entailed new duties. This happened in 1793, when the establishment known by the name of the king's garden and cabinet were remodelled and distinguished by the title of *Museum of Natural History*. The professors of the suppressed institution were appointed to superintend such departments taught in the new, as most nearly corresponded to their previous occupations; and as Lamarck was the last appointed, he was obliged to take charge of that branch unappropriated by the others, which happened to be the two extensive classes of the animal kingdom, named *Insecta* and *Vermes* by Linnaeus.

A new direction was thus given to his studies, for zoology as a science had hitherto occupied but little of his regard. Indeed, the only knowledge of this subject which he possessed, directly available in his new station, seems to have been limited to *Testaceous Mollusca*, which attracted his attention at a pretty early period. But the occasion was just such a one as was best calculated to excite the natural ardour and energy of his character. He entered upon this new field of inquiry with the utmost eagerness, and cultivated it with so much skill and facility, that he was soon in a condition

to instruct others, and ultimately to produce works which will form a lasting monument to his fame.

Before engaging in the study of practical zoology, Lamarck had rendered himself conspicuous by the boldness and originality of his speculations regarding a variety of physical phenomena. The general laws of chemistry, the origin of the globe and its inhabitants, the condition of the atmosphere and of living bodies, and most other great questions fitted to attract an active fancy, had by turns been the subjects of his contemplation; and on many of them he had elaborated a theory which he conceived calculated to elucidate the most abstruse phenomena they presented. To these views he attached the highest importance, considering them destined to place almost every branch of knowledge on a new and secure foundation. He therefore took advantage of every opportunity to enforce and illustrate them, and they will be found to pervade most of his published works, even such as afford no obvious plea for their introduction. Although most of them are exploded as fanciful and untenable, these theories display much ingenuity and extensive knowledge, and a pretty full account of them is necessary to show the character of Lamarck's mind, and the wide range of his studies.

As early as 1780, he had presented his Theory of Chemistry to the Academy of Sciences; but it was not published for several years afterwards, when it appeared under the title of "Researches on the Causes of the most important physical Facts, and

particularly on those of Combustion ; of the raising of Water in the State of Vapour ; of the Heat produced by the Friction of solid Bodies against each other," &c. &c. A condensed view of the opinions promulgated in that work, and some others on the same subject, is thus given by Cuvier. According to our author, " Matter is not homogeneous ; it consists of simple principles, essentially different among themselves. The connexion of these principles in compounds varies in intensity ; they mutually conceal each other, more or less, according as each of them is more or less predominant. The principle of no compound is ever in a natural state, but always more or less modified : as, however, it is not agreeable to reason that a substance should have a tendency to depart from its natural condition, it must be concluded, that combinations are not produced by Nature, but that, on the contrary, she tends unceasingly to destroy the combinations which exist, and each principle of a compound body tries to disengage itself according to the degree of its energy. From this tendency, favoured by the presence of water, dissolutions result : affinities have no influence ; and all experiments by which it is attempted to be proved that water decomposes, and consists of many kinds of air, are mere illusions, and that it is fire which produces them. The element of fire* is subject, like the others, to modification when combined. In its natural state, every-

* Memoir on the substance of fire, considered as a chemical agent in analysis.—*Journal de Physique, Floreal, An. vii.*

where diffused and penetrating every substance, it is absolutely imperceptible: only, when it is put in vibration, it becomes the essence of sound; for air is not the vehicle of sound as natural philosophers believe*. But fire is fixed in a great number of bodies, where it accumulates, and becomes, in its highest degree of condensation, *carbonic fire*, the basis of all combustible substances, and the cause of all colours. When less condensed, and more liable to escape, it is *acidific fire* (*feu acidiflique*), the cause of causticity when in great abundance, and of tastes and smells when less so. At the moment when it disengages itself, and in its transitory state of expansive motion, it is *caloric fire*. It is in this form that it dilates, warms, liquifies, and volatilizes bodies by surrounding their molecules; that it burns them by destroying their aggregation; and that it calcines or acidifies them by again becoming fixed in them. In the greatest force of its expansion, it possesses the power of emitting light, which is of a white, red, or violet-blue colour, according to the force with which it acts; and it is, therefore, the origin of the prismatic colours, as also of the tints seen in the flame of candles. Light, in its turn, has likewise the power of acting upon fire, and it is thus that the sun continually produces new sources of heat. Besides, all the compound substances observed on the globe are owing to the organic powers of beings endowed with life, of which, con-

* Memoir on the substance of sound.—*Journal de Physique*, 16 & 26 Brumaire, An. vii.

sequently it may be said, that they are not conformable to nature, and are even opposed to it, because they unceasingly reproduce what nature continually tends to destroy. Vegetables form direct combinations of the elements; animals produce more complicated compounds by combining those formed by vegetables; but there is in every living body a power which tends to destroy it; all therefore die, each in his appointed season, and all mineral substances, and all organic bodies whatsoever, are nothing but the remains of bodies which once had life, and from which the more volatile principles have been successfully disengaged. The products of the most complex animals are calcareous substances, those of vegetables are argils or earths. Both of these pass into a siliceous state, by freeing themselves more and more from their less fixed principles, and at last are reduced to rock-crystal, which is earth in its greatest purity. Salts, pyrites, metals, differ from other minerals, only because certain circumstances have had the effect of accumulating in them, in different proportions, a greater quantity of carbonic or acidific fire."

Lamarck's opinion regarding the origin of living beings, and the manner in which they acquired the various organs and forms which they now possess, are well known. They were first given to the public in 1802, in a work entitled "Researches on the Organization of living Bodies, on the Cause of its Developements, and the Progress of its Composition, and on that Principle, which, by continually

tending to destroy it in every Individual neeessarily brings on Death." He eoneeives that the egg, for example, contains nothing prepared for life before being fecundated, and that the embryo of the chick beeomes susceptible of vital motion only by the aetion of the seminal vapour ; but if we admit that there exists in the universe a fluid analogous to this vapour, and eapable of aeting upon matter plaeed in favourable eircumstanees, as in the case of embryos, we will then be able to form an idea of spontaneous generations. The more simple bodies, such as a monad or a polypus, are easily formed ; and this being the ease, it is easy to conceive how, in the lapse of time, animals of more eomplex strueture should be produced, for it must be admitted as a fundamental law, that the production of a new organ in an animal body results from any new want or desire whieh it may experience. The first effort of a being just beginning to develope itself, must be to procure the means of subsistence, and henee in time there eame to be produced a stomach or alimentary eavity. Other wants, occasioned by eircumstanees, will lead to other efforts, which in their turn will produce new organs. One of the gasteropode molluscae, for example, may be conceived to have felt the necessity, as it moved along, of exploring by touch the bodies in its path and to have made efforts to do so with some of the anterior points of its head, which would continually direct to that point masses of the nervous fluid, as well as other liquids : from these reiterated affluences

to the point in question, there would follow a gradual expansion of the nerves which terminate there ; and as the nutritious and other juices likewise flow to the same point, it must necessarily happen that two or four tentacula would insensibly be produced. This is no doubt what happens in regard to all the gasteropode tribes, whose wants occasion the habit of feeling bodies by touching them with the parts of their head ; and when such wants are not felt, the head remains destitute of tentacula, as may be seen in other instances, &c.* In like manner it is the desire and the attempt to swim, that had, in time, the effect of extending the skin that unites the toes of many aquatic birds, and thus the web-foot of the gull and duck were at last produced. The necessity of wading in search of food, accompanied with the desire to keep their bodies from coming in contact with the water, has lengthened to these present dimensions, the legs of the grallæ or wading-birds ; while the desire of flying has converted the arms of all birds into wings, and their hairs and scales into feathers. Changes of this nature may appear to us contrary to what falls under our observation, which leads us to suppose that the specific forms of animals are constant ; but this error is entirely owing to the difficulty we experience in embracing a considerable portion of time within the scope of our observations. It is from this cause that we cannot be ourselves witnesses of these changes, and neither history nor written observations extend to sufficiently remote a

* *Animaux sans vertébres*, vol. i. p. 188, 189.

date to convince us of our mistake. If we observe that the forms of the parts of animals are always perfect when viewed in relation to their use, as is really the case, it is not to be inferred that it is the form of the parts which has led them to be employed in a certain way, as zoologists assert, but that it is, on the contrary, the need of action which has produced the peculiar parts, and it is the employment of these parts which has developed them, and established a proper relation between them and their functions. To affirm that the form of the parts induced their functions, would be to leave Nature without power, incapable of producing any act, or any change in bodies; and the different parts of animals, as well as the animals themselves, as all created at first, would from that moment present as many forms as are required by the diversity of circumstances in which animals live; and it would be necessary that these circumstances should never vary, and that such should likewise be the case with the parts of each animal. Nothing, however, of this kind takes place; and nothing can be more opposite to the means which observation shows us that Nature employs to call into existence her manifold productions. It must hence appear, that what are called species do not exist in nature; that the constancy of races to which that name has been given, can only be temporary and not absolute, although they would no doubt continue the same as long as the circumstances which effect them undergo no change, and they are not forced to alter their ha-

bitudes. It is susceptible of demonstration, that if species had an absolute constancy, there would be no varieties, but naturalists cannot help acknowledging that such exist*.

Whatever changes circumstances may have produced in individuals, are all preserved by generation, and transmitted to new individuals emanating from those which have undergone these changes. Unless this were the case, Nature could never have introduced the diversity among animals which we now witness, nor a progression in the composition of their organs and faculties†.

Such is Lamarck's theory of life, and manner of accounting for the innumerable variety of forms in which living nature now appears. If his principles were once admitted, they would not only produce the effects he ascribes to them, but it would be a matter of surprise that natural productions are not infinitely more diversified than they really are, for nothing more is necessary than time and circumstances for any one animal form to be transformed into any other,—for a monad or a polypus to become indifferently a frog, an eagle, an elephant, or a man. But the two suppositions on which they rest, viz. that it is the seminal vapour which organizes the embryo, and that efforts and desires engender organs, are both so entirely arbitrary, and the latter so obviously fallacious, that very few have ever thought it worth while to attempt a formal

* *Aminaux sans Vertébres*, vol. i. p. 197, 198.

† *Ib.* p. 199.

refutation of them. It is difficult, indeed, to conceive how Lamarck could advance a theory so utterly opposed to observation and probability, and at the same time succeed so effectually in convincing himself of its truth. He must have perceived many of the inadmissible and absurd conclusions to which it led ; yet he persists in maintaining it by a kind of sophistry which could impose on none but himself. He admits the value of observation and experience in the discovery of truth ; but finding that they bore no testimony to the wonderful transformations he was desirous to prove, he gets rid of their evidence altogether, by alleging that they do not extend over a sufficiently lengthened period to take cognizance of these changes. The argument, therefore, on this point, virtually amounts to this, that observation gives no notice of these operations, but that instead of thence inferring that they do not take place, the proper conclusion is, that they are actually going on, and have been in progress since the creation ! How indispensable unlimited time is to give an air of plausibility to Lamarck's theory, is strikingly evinced by the fact, of which he was perfectly aware, that we have the means of comparing animals that lived upwards of two or three thousand years ago, with the same species as they exist at present, and the conformity between them is found to be complete. Numerous quadrupeds, birds, reptiles, and insects, have been found embalmed in the Egyptian cemeteries, with all the parts in such a state of preservation as to be per-

fectly recognizable. "It would seem," says the professors of the museum at Paris, in their report on these valuable remains*, "as if the superstition of the ancient Egyptians had been inspired by Nature, in order to transmit to future times a monument of her history. By embalming with so much care the brutes which were the objects of their foolish adoration, that extraordinary and capricious people have left us, in their sacred grottoes, almost complete cabinets of zoology. The climate has conspired with the art of embalming to preserve bodies from corruption, and we can now satisfy ourselves, by our own eyes, what was the condition of many species three thousand years ago. It is difficult to restrain the transports of our imagination, when we behold thus preserved, with their minutest bones, the smallest portions of their skin, and in every respect most perfectly recognizable, many animals, which at Thebes or Memphis, two or three thousand years ago, had their own priests and altars." In regard to these curious relicts, Lamarck was forced to admit that they were identical with their living descendants in the same country, and accounted for it by saying that this happened because the climate and other physical conditions of the latter had long continued unaltered. But he makes no attempt to account for the fact which is so fatal to his theory, that these remains entirely correspond to individuals of the same species in many different quarters of the globe, where the physical conditions are so dis-

* Ann. du Museum d'Hist. Nat., tom. i. p. 234.

similar that they ought to have produced important changes*.

It will likewise be observed as an important defect in Lamarck's argument, that he can cite no positive fact to exemplify the substitution of some *entirely new* sense, faculty, or organ, in the room of some other suppressed as useless. "All the instances adduced," says Mr. Lyell, "go only to prove that the dimensions and strength of members, and the perfection of certain attributes may, in a long succession of generations, be lessened and enfeebled by disuse; or, on the contrary, be matured and augmented by active exertion, just as we know that the power of scent is feeble in the greyhound, while its swiftness of pace and its acuteness of sight are remarkable; that the harrier and staghound, on the contrary, are comparatively slow in their movements, but excel in their sense of smelling. We point out to the reader this important chasm in the chain of the evidence, because he might otherwise imagine that we had merely omitted the illustrations for the sake of brevity; but the plain truth is, that there were no examples to be found, and when Lamarck talks of 'the efforts of internal sentiment,' 'the influence of subtile fluids,' and the 'acts of organization,' as causes whereby animals and plants may acquire *new organs*, he gives us names for things, and with a disregard of the strict rules of induction, resorts to fictions, as ideal as the

* Lyell's Principles of Geology, ii. p. 31.

‘plastic virtue,’ and other phantoms of the middle ages.

“It is evident, that if some well authenticated facts could have been adduced to establish one complete step in the process of transformation, such as the appearance in individuals descending from a common stock, of a sense or organ entirely new, and a complete disappearance of some other enjoyed by their progenitors, that time alone might then be supposed sufficient to bring about any amount of metamorphosis. The gratuitous assumption, therefore, of a point so vital to the theory of transmutation, was unpardonable on the part of its advocate*.”

The transmutability of species is a point which has been maintained by many naturalists besides Lamarck, and the reasons they have adduced in support of their opinions are so various, that the full consideration of them would be inconsistent with our present purpose. It may be assumed as capable of most satisfactory proof, that the mutations which species undergo in accomodating themselves to a change of external circumstances, have a definite limit, and are regulated by constant laws; and that the capability of so varying, forms part of the specific character. Indefinite divergence from the original type is guarded against, in the case of intermixture of distinct species, by the sterility of the mule offspring; circumstances which show that

* Principles of Geology, ii. p. 8.

species were designed to retain the individuality of character with which they were endowed at the time of their creation, and that they have a real existence in nature*.

The intellectual faculties of animals, Lamarck regards as entirely the result of organization. Even in the case of the most perfect of them, the human species, there is no distinct recognition of a spiritual substance derived from heaven ; and all intellectual phenomena whatever, are ascribed to some physical cause. Nature, he conceives, offers nothing cognizable by us but *body* ; the movements, changes, and properties of *bodies*, form the only field open to our observation, and the only source of real knowledge and useful truths†. The place of the soul seems to be usurped by a certain *interior sentiment*, to which he continually refers, as exercising a most powerful influence over all the faculties, and giving rise to all the passions and affections‡. Thus the noblest faculties of the mind, “ the capability and godlike reason,” by which we are distinguished from other animals,

— and this spirit,
This all-pervading, this all-conscious soul,
This particle of energy divine,
Which travels nature, flies from star to star,
And visits gods, and emulates their powers ;

* This subject will be found to be discussed at considerable length, and in a very satisfactory manner, in the second volume of Mr. Lyell's *Principles of Geology*, p. 1—65.

† *Animaux sans Vertébres*, i. p. 260.

‡ *Ibid.* 258, *N. Dict. d'Hist. Nat.* xvi. Art. *Intelligence*.

are made to emanate from a certain relation of parts and organs,—a particular conformation of material substances, just as a desired result is obtained by arranging in a certain order the parts of a piece of mechanism.

“ But who can believe that such a faculty, so divine, so godlike and spiritual, can be the mere result of organization? That any *juxta-position* of *material* molecules, of whatsoever nature, from whatever source derived, in whatever order and forms arranged, and wherever placed, could generate thought, and reflection, and reasoning powers, could acquire and store up ideas and notions, as well concerning metaphysical as physical essences, may as safely be pronounced impossible, as that matter and spirit should be homogeneous. Though the intellectual part acts by the brain and nerves, yet the brain and nerves, however ample, however developed, are not the intellect, nor an intellectual substance, but only its instrument, fitted for the passage of the prime messenger of the soul, its nervous fluid or power to every motive organ. It is a substance calculated to convey instantaneously that subtile agent, by which spirit can act upon body, wherever the soul bids it to go and enables it to act. When death separates the intellectual and the spiritual from the material part, the introduction of a fluid, homogeneous with the nervous, or related to it by a galvanic battery, can put the nerves in action, lift the eyelids, move the limbs; but though the action of the intellectual part may thus be

imitated, in newly deceased persons, still there are no signs of returning intelligence, there is no life, no voluntary action, not a trace of the spiritual agent that has been summoned from its dwelling. Whence it follows, that though the organization is that by which the intellectual and governing power manifests its presence and habitation, still it is evidently something distinct from and independent of it*."

With opinions having such a decided tendency to materialism, it is not surprising that Lamarck seldom makes allusion to a Deity, and when he does so, he nearly confines himself to the bare acknowledgment of his existence. In his earlier works, there is no mention made of a Supreme Being whatever; and even when his existence is admitted, He is divested of the attributes which belong to him. The glory of forming the works of creation, in which His beneficence and power are so signally manifested, is ascribed to *nature*, or a *certain order of things*. This power to which the Deity has delegated his prerogatives, and which he has appointed his vicegerent, Lamarck defines as "An order of things composed of objects independent of matter, which are determined by the observation of bodies, and the whole amount of which constitutes a power, unalterable in its essence, governed in all its acts, and constantly acting upon all the parts of the physical universe†." This blind power, which

* *Kirby's Bridge. Treat. Intro.* p. xxxii.

† *N. Dict. d'Hist. Nat.* xxii. Art. *Nature*, 377; *Anim. sans Vert.* i. p. 317.

acts necessarily, has not, indeed, called matter into existence, but it has formed all bodies of which matter is essentially the base; and as it exercises no power except on the latter, which it modifies and changes in every possible manner, producing all its various aggregates and combinations, we may be assured that it is it which has made all bodies such as we now behold them, and that it is Nature which confers on some their properties, and on others the faculties which they exercise*. All this power Lamarck distinctly admits has been delegated to Nature by the Deity, and among other errors which he conceives to have attached to the ideas which have been entertained regarding Nature, he refutes the notion that Nature is the Deity himself. "Strange occurrence! that the watch should have been confounded with its maker, the work with its author. Assuredly this idea is illogical and unfit to be maintained. The power which has created Nature, has, without doubt, no limits, cannot be restricted in its will or made subject to others, and is independent of all law. It alone can change Nature and her laws, and even annihilate them; and although we have no positive knowledge of this great object, the idea which we thus form of the Almighty Power, is at least the most suitable for man to entertain of the Divinity, when he can raise his thoughts to the contemplation of him. If Nature were an intelligence, it could exercise volition, and change its laws, or rather there could be

* *Anim. sans Vert.* i. p. 316.

no law. Finally, if *Nature* were God, its will would be independent, its acts unconstrained; but this is not the case; it is, on the contrary, continually subject to constant laws, over which it has no power: it hence follows, that although its means are infinitely diversified and inexhaustible, it acts always in the same manner in the same circumstances, without the power of acting otherwise*."

While thus admitting the existence of the Deity, any direct interference in the affairs of the universe is wholly denied to him. His sovereignty is reduced to a mere nominal supremacy, as he is supposed to take no care or thought for the worlds which he authorized or permitted to be created, and can have no sympathy for the creatures which inhabit them. As with La Place, and so many other philosophers of the French school, every thing is ascribed to *secondary causes*, which are made to usurp the place and attributes of the Divinity. Lamarck's deity, therefore, is the exact counterpart of the god of Epicurus, whose being is allowed seemingly more for the purpose of giving consistency to a theory, or a compliance with generally received opinions, than from any urgent conviction of his reality; and we may justly apply to him what was said of the Grecian philosopher; *Re tollit, oratione relinquit Deum.*

It has been already mentioned, that Lamarck's attention was early directed to meteorology, and it seems long to have continued to form one of his

* *Anim. sans Vert.*, vol. i. 322.

most favourite studies. So comparatively limited is our positive knowledge of atmospheric phenomena, that a careful investigation of them afforded the prospect of new and important discoveries; while the endless variety of appearances which they present, and the complicated influences which operate in producing them, offered a wide and interesting field for the exercise of that speculative kind of inquiry which Lamarck loved to indulge. With his usual facility in such matters, he was not long in advancing a theory, according to which the atmosphere is regarded as resembling the sea, having a surface, waves, and storms; it ought, likewise, to have a flux and reflux, for the moon ought to exercise the same influence upon it that it does on the ocean. In the temperate and frigid zones, therefore, the wind, which is only the tide of the atmosphere, must depend greatly on the declination of the moon; it ought to blow towards the pole that is nearest to it, and advancing in that direction only, in order to reach every place, traversing dry countries or extensive seas, it ought then to render the sky serene or stormy. If the influence of the moon on the weather is denied, it is only that it may be referred to its phases; but its position in the ecliptic is regarded as affording probabilities much nearer the truth*.

* On the Influence of the Moon on the Earth's Atmosphere; *Journal de Physique*, Prairial, an. vi. Most of Lamarck's other essays on Meteorology will be found in the periodical just named.

So convinced was Lainarck of the accuracy and value of his theory, that he resolved on reducing it to practice, and thus at the same time establish its truth, and attract the attention of the public towards it. For this purpose he drew up a series of almanacks, which he had the perseverance to publish for ten consecutive years, the nature of which will be best understood from the title of that which first appeared. "Annual Meteorology for the Year VIII of the Republic (1800, A. D.), containing an Exposition of the Probabilities acquired by a long Series of Observations on the State of the Weather, and Variations of the Atmosphere, in different Seasons of the Year; an Indication of the Times when it may be expected to be fine Weather, or Rain, Storms and Tempests, Frosts, &c.: finally, an Enumeration, according to Probabilities, of the Times favourable for Fêtes, Journeys, Voyages, Harvest, and other Undertakings, in which it is of Importance not to be interrupted by the Weather; with simple and concise Directions regarding these new Measures." His predictions, as might have been expected, proved more frequently erroneous than otherwise, but this circumstance was far from inducing him to discontinue his exertions. Every year he had recourse to some new consideration,—such as the phases, the apogee and perigee of the moon, and the relative position of the sun, to account for his previous failure, and afford greater certainty in his future prognostications. After every expedient had been tried without success, he was

at last obliged to renounce the labour as fruitless, satisfied that, however important it would be to foresee the state of the weather, it depends on causes far too remote and complex to be made the subject of calculation.

Speculations of an analogous character regarding the formation of the globe and the changes which it has undergone, were laid before the public, in 1802, in a work entitled “ Hydrogeology, or Researches on the Influence exerted by Water on the Surface of the terrestrial Globe,” &c. &c. His opinions rest on the assumption that all composite minerals are the remains of living beings. According to him, the seas are continually hollowing out their bed in consequence of being unceasingly agitated by the tides, produced by the action of the moon ; in proportion as the bed deepens in the crust of the earth, it necessarily follows that their level lowers, and their surface diminishes ; and thus the dry land, formed by the *debris* of living creatures, is more and more disclosed. As the land emerges from the sea, the water from the clouds forms currents upon its surface, by which it is rent and excavated, and divided into valleys and mountains. With the exception of volcanoes, our steepest and most elevated ridges have formerly belonged to plains, even their substance once made a part of the bodies of animals and plants ; and it is in consequence of being so long purified from foreign principles that they are reduced to a siliceous nature. But running waters furrow them in all directions, and carry their mate-

rials into the bed of the sea ; and the latter, from continual efforts to deepen its bottom, necessarily throws them out on one side or other. Hence there results a general movement and a constant transportation of the ocean, which has perhaps already made several circuits of the globe. This shifting cannot occur without displacing the centre of gravity in the globe ; a circumstance which would have the effect of displacing the axis itself, and changing the temperature of the different climates.—In order to silence any doubts that may arise in the minds of his readers from not observing these changes going forward, Lamarck is careful to add, as in the case of the supposed transformation of species, that an unlimited length of time must be allowed for their accomplishment.

But the work on which Lamarck's fame is principally founded, and which has conferred a most important service on zoology, is his *Histoire Naturelle des Animaux sans Vertébres*. From the time of its appearance, this work has ever been regarded as one of the highest authority, and has formed the principal regulator of most departments of this extensive race of animals. The work extends to seven octavo volumes, and is entitled “ Natural History of invertebrate Animals, presenting the general and particular Characters of these Animals, their Distribution, Classes, Families, Genera, and the principal Species referable thereto.” The first volume is entirely occupied with an introduction, the object of which is to determine the essential cha-

ractions of an animal, its distinction from vegetables and other natural bodies, and to explain the fundamental principles of zoology. This introduction may be regarded as furnishing a synoptical view of all the author's peculiar opinions on the origin and developement of living beings, which are illustrated more in detail in separate works. The first five volumes are written entirely by Lamarck, but he was assisted in the part relating to insects by M. Latreille. A portion of the sixth volume and the whole of the seventh, were drawn up by his daughter from his notes and papers, his want of sight preventing him from undertaking that labour himself; and that part of the sixth, which relates to the *mytilacés*, *malliacés*, *pectinides*, and *ostracés*, is written by M. Valenciennes. The first part was published in 1815, and the other parts appeared at intervals up to 1822, when the whole was completed. Besides a luminous and comprehensive account of the general history of the different groups and genera, the principal species are cited and briefly characterized, with their synonymes, reference to figures, and localities. The enumeration of species sometimes includes all the known kinds, and is particularly copious and instructive in relation to sponges and shell-bearing molluscæ. The genera are established with much discrimination, and judiciously characterized by obvious properties, such as form, proportion, nature of the surface, and structure. The synonymy is unravelled with great care, and the descriptions, though necessarily often

very brief, are in general highly satisfactory. These circumstances have rendered this work the most valuable system that has ever appeared of the invertebrate animals; and it has formed the guide to most authors who have since written on the subject*.

The phrase *invertebrate animals* originated with Lamarck, and it expresses, as Cuvier remarks, perhaps the only circumstances in their organization which is common to them all. They were previously known as *white-blooded animals*, a designation which was soon shown to be improper, by the discovery that an entire class (the *annelides*) possesses red blood. The system of Linnæus and Bruguière formed the basis of his course when he first began to lecture on the subject; he subsequently adopted a new classification, founded on their anatomy, which had been published in 1795. This he afterwards modified in various ways, as new discoveries were made, and as new relations suggested themselves to him. In his system of invertebrata, forming an octavo volume, published in 1810, he adopted the class of *crustacea*, and created that of *arachnides*, a step which he judged necessary, in consequence of some new information that had been communicated to him on the heart and pulmonary sacs of spiders. In a previous work he had admitted the *annelides* to the rank of a separate class,

* The most recent and probably the best edition of the *Animaux sans Vertébres*, is in eight volumes octavo, augmented with notes by M. M. Deshages and Milne Edwards.

in consequence of Baron Cuvier's observations on their circulating organs and the colour of their blood, which resembles that of the vertebrate races. Two other classes were created, in his "Philosophical Zoology," viz. the *infusoria* and the *centripedes*; and in this work also he first deviated from the ordinary practice of commencing the arrangement with the most perfectly organized, the inverse order being more in accordance with his theoretical views, which assumed a gradual *progression* in the composition of animal organs, proceeding from the most simple to the most complex.

It was in a small volume, entitled "An Extract from the Zoological Course in the Museum of Natural History, on the invertebrate Animals," &c. published in 1812, that he first presented his general distribution of animals into three grand divisions, *apathetic*, *sentient*, and *intelligent*. This plan he made the foundation of his great work, and the method in which he applied it, as well as his ideas regarding the constitution of the different classes, and their relation to each other, will be understood from the subjoined table.

Vertebrate Animals. Invertebrate Animals.	I. APATHETIC ANIMALS. <ol style="list-style-type: none"> 1. <i>Infusoria.</i> 2. <i>Polypes.</i> 3. <i>Radiarii.</i> 4. <i>Vermes.</i> (<i>Epizoaires.</i>)
	II. SENTIENT ANIMALS. <ol style="list-style-type: none"> 5. <i>Insecta.</i> 6. <i>Arachnides.</i> 7. <i>Crustacea.</i> 8. <i>Annelides.</i> 9. <i>Cirrhipedes.</i> 10. <i>Mollusca.</i>
	III. INTELLIGENT ANIMALS. <ol style="list-style-type: none"> 11. <i>Pisces.</i> 12. <i>Reptilia.</i> 13. <i>Aves.</i> 14. <i>Mammiferæ.</i>

The animals of the first primary division he defines as destitute of feeling, and moving only by their excited irritability; and he assigns as their character, the absence of a brain and of an elongate medullary mass; senses wanting; forms various; articulations rarely existing. The animals of the second division feel, but they obtain from their sensations only *perceptions* of objects, a kind of simple ideas which they are unable to combine with each other in order to form complex ones. They possess no vertebral column, but have a brain and most frequently an elongate medullary mass; some distinct senses; organs of motion attached under the

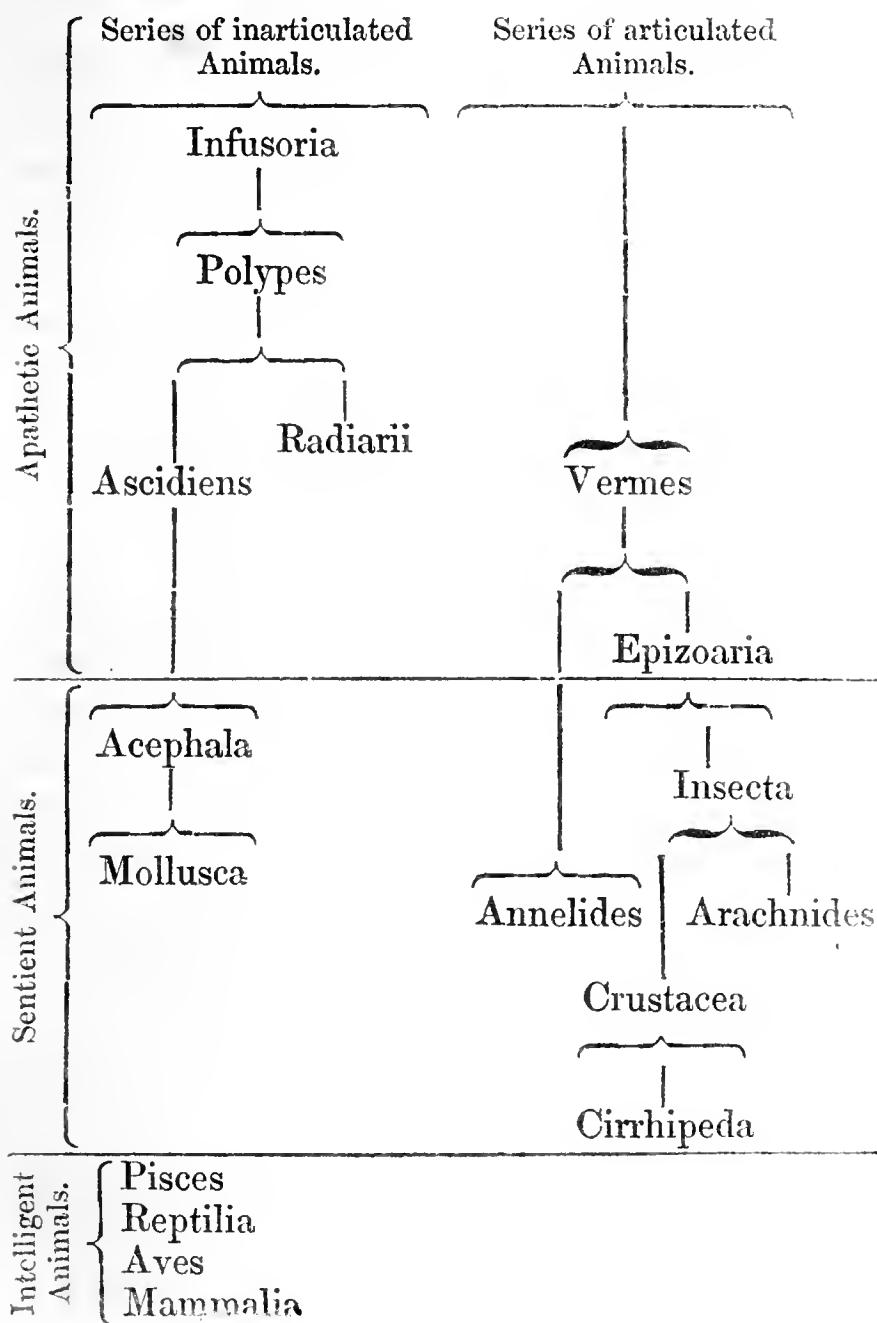
skin ; the form symmetrical, the parts arranged in pairs. The *intelligent* animals, forming the third grand division, feel, and acquire ideas capable of being preserved, and execute operations between these ideas which furnish them with others ; and they are intelligent in different degrees. They possess a vertebral column, a brain and spinal marrow ; distinct senses ; organs of motion fixed to an interior skeleton, and symmetrical forms, the parts being placed in pairs*.

This general distribution of animals has not been very much approved of by naturalists ; and Cuvier asserts that it is neither founded on their organization, nor an exact observation of their faculties. The degree of intelligence observed in the different classes, would certainly lead most observers to give a very different position to several, from that which they have obtained in the above scale. The *insecta* and *arachnides*, for example, which are made to occupy the lowest place among the sentient races, are undoubtedly entitled to the rank assigned to the *mollusca* and *cirrhipedes* ; for there can be no comparison in this respect between a hive-bee or an ant, and an imperfectly organized and almost inanimate mollusc.

At a subsequent period, in consequence of some new discoveries made by M. M. Savigny, Leseur, and Desmarests, he separated certain tribes from the polypi, and formed them into a distinct class under the name of *ascidiens*. Some new views likewise

* *Animaux sans Vertébres*, i. 381.

occurred to him regarding the general arrangement of animals, and instead of presenting them in a simple series, he divided them into two subramose series, as follows:—



This arrangement is particularly deserving of attention, from its being admitted by the author of the circular system to be the first approach to a perception of that order of affinities which he supposes to pervade the whole animal kingdom. “In the first volume of his celebrated work,” says Mr. Mac Leay, “Lamarck acknowledges that the idea of a simple series constituting the whole of the animal kingdom does not agree with the evident order of nature, because, to use his own words, this order is far from simple; it is branched, and is at the same time composed of several distinct series. He then presumes, that animals offer two separate subramose series, one commencing with the *infusoria*, and leading by means of the *mollusca* to the cuttle-fish (*cephalopoda*), and the other commencing with the intestinal worms, and leading to insects. Now, this notion could only have gained a place in the mind of Lamarck from a conviction by experience of its being an incontrovertible truth. His table of affinities, however confused it may appear, or *subramose*, as it is termed, coincides with the tabular view which I have laid before the public. We have only to join the *radiata* to the *cirripeda*, and the *annelides* to fishes, and Lamarck’s table of affinities, with scarcely any alteration, becomes precisely the same as mine*.”

In addition to the various branches of natural history already enumerated as cultivated by this indefatigable and ingenious inquirer, another still

* *Hcræ Entomologicae*, p. 213.

remains to be mentioned, to which he communicated a remarkable impulse ; namely, the history of fossil shells. This highly important and interesting subject had long attracted the attention of geologists, but owing to the difficulties with which it is invested, it still remained in comparative obscurity. One of the facts most desirable to be ascertained in relation to these remains, was, whether they were identical with species now living, a point which could be determined only by a careful comparison. Applying to this investigation that profound knowledge which he had acquired of recent shells, Lamarck was enabled to illustrate the subject in a most satisfactory manner, and to throw light on some of the most anomalous phenomena which it presents to the inquirer. Besides his extensive acquaintance with the *testacea*, he enjoyed another advantage for entering upon an inquiry of this nature by residing at Paris, the vicinity of which has long been celebrated for the number and variety of its fossil productions*. The result of his investigation appeared in several of the earlier volumes of the Annals of the Museum ; but the memoir was never brought to a conclusion. It was accompanied with a quarto volume of plates, containing figures of great beauty and accuracy.

Such are the principal subjects to which Lamarck's

* Cuvier conceives that the basin of Paris contains a greater accumulation of fossil shells than any other place of equal extent. At Grignon, no fewer than six hundred different species have been collected in a space not exceeding a few square toises.

attention was directed, together with some of the results to which his investigations led him. After his establishment in the Museum of Natural History, much of his time was occupied with the objects whose history he was appointed to teach ; and so favourably were his labours in this department received by the public, that his interest as well as his inclination would have conspired to make him cultivate it to the uttermost. But his exertions received an early check, and were at last entirely stopped, by the inroads of a most afflicting calamity. His eyes had long been weak, and as he advanced in years, they became so diseased, that he was obliged to refrain from using them for the examination of any minute object. Hence it was that he had recourse to the celebrated Latreille to assist him in that part of his system of invertebrata which related to insects. Notwithstanding every precaution, the disorder increased, and at last produced total blindness, which continued till his death. " This event was the more distressing," says Cuvier, " because it overtook him in such circumstances that he could obtain none of those means of alleviation which might otherwise have been procured. He had been married four times, and was the father of seven children. The whole of his little patrimony, and even the fruits of his early economy, were lost in one of those hazardous investments which shameless speculators so often hold out as baits to the credulous. His retired life, the consequence of his youthful habits, and attachment to systems so little in accord-

ance with the ideas which prevailed in science, were not calculated to recommend him to those who had the power of dispensing favours. When numberless infirmities, brought on by old age, had increased his wants, nearly his whole means of support consisted of a small income derived from his chair. The friends of science, attracted by the high reputation which his botanical and zoological works had conferred on him, witnessed this with surprise. It appeared to them, that a government which protects the sciences, ought to have provided for the wants of a celebrated individual; but their esteem for him was doubled, when they saw the fortitude with which the illustrious old man bore up against the assaults both of fortune and of nature. They particularly admired the devotedness which he inspired in such of his children as remained with him. His eldest daughter, entirely devoted to the duties of filial affection for many years, never left him for an instant, readily engaged in every study which might supply his want of sight, wrote to his dictation a portion of his last works, and accompanied and supported him as long as he was able to take some exercise. Her sacrifices, indeed, were carried to a degree which it is impossible to express; when the father could no longer leave his room, the daughter never left the house. When she afterwards did so, for the first time, she was incommoded by the free air, the use of which had been so long unfamiliar to her. It is rare to see virtue carried to such a degree, and it is not less so to inspire it to that

degree ; and it is adding to the praise of M. de Lamarck, to recount what his children did for him."

After several years of affliction, his constitution at last gave way, and he died on the 18th December, 1829, in the 85th year of his age. Some of his children had been carried off previously, and at the time of his disease only two sons and two daughters survived. The eldest of the former was appointed to a situation of considerable trust under government.

A just estimate of Lamarck's merits, will entitle him to occupy a high place among modern naturalists. Endowed by nature with varied and vigorous mental powers, he was fitted to excel in many branches of knowledge, and never failed to strike out a new path in every department to which he attached himself. He possessed, in an eminent degree, some intellectual qualities which are not frequently combined ; a lofty and active imagination, in no way unfitted him for the most unwearyed and laborious investigation of minute matters of fact. Hence he seems equally following the natural bent of his mind, when devising a theory to explain the most recondite operations of nature, and describing the markings of a shell, or the ramifications of a coral. It is to be lamented that his imagination so often gained the ascendency over his other faculties, and led to those daring and licentious speculations which have been alluded to. But in other instances, his fancy becomes the legitimate handmaid of his reason, and lends her aid in beautifying and illustrating his

speculations. He possessed especially all the requisite qualifications for a zoologist, and it is on what he accomplished in this department that his fame must principally rest. When we perceive the admirable manner in which he discerned and characterized natural groups, his skill in seizing on the most distinctive marks of species, the indefatigable industry with which he investigated their history and synonymy, together with the excellence of his system of arrangement,—we are led to regret that he was so late in entering upon this field of labour, as to be obliged to confine his attention to one division of the animal kingdom, and that he so frequently deviated even from that, in order to indulge his favourite practice of theorizing.

However little value may now be attached to these theories, without a due consideration of them, we can neither appreciate some of the best of Lamarck's writings, nor understand the character of the man himself. In his own eyes, they appeared of paramount importance. The most practically useful of his zoological and botanical works he regarded as trivial in comparison. He conceived them to present a key to some of the most secret operations of nature, and to afford the means of placing many branches of knowledge on a new foundation. This ardent attachment to views which have so generally been considered extravagant and untenable, may seem surprising in the case of an individual whom all must acknowledge to be possessed of much acuteness and discrimination. It is perhaps

to be accounted for by their being nursed in the long solitudes to which his bad health and limited circumstances frequently confined him, without having his eyes opened to their fallacies by a discussion of their merits, or interchange of thought with others: for

'Tis thought's exchange, which, like the alternate rush
Of waves conflicting, breaks the learned scum,
And defecates the student's standing pool;
By that untutor'd, contemplation raves,
And nature's fool by wisdom is outdone.

It may likewise be supposed that he would be unwilling to perceive, or if he did perceive, equally reluctant to acknowledge, the imperfection of systems which he had wrought out with so much care and labour. For that they must have cost him a great degree of laborious thought, will appear from the slightest inspection. It must also be allowed, that they evince a reach of mind, a power of original thinking, and a degree of varied knowledge, calculated to convey no mean idea of his intellectual character. Neither can we deny to them a certain degree of consistency, or adaptation of parts to each other; and although the praise of consistency must be qualified by the admission that it is consistency in error, yet, in such cases, this is of such difficult attainment, as of itself to imply a high degree of acuteness and circumspection. However startling the conclusions to which Lamarck leads us, they are generally drawn by a legitimate and fairly managed process of induction from the assumed

premises. But the very extravagance of the conclusions ought to have created a suspicion that the premises were erroneous; and they are, in fact, almost invariably found to be wholly inadmissible.

While, therefore, we acknowledge Lamarck's eminent excellence in the ordinary subjects of natural history, we cannot fail to lament that his attention was so often engrossed by fanciful speculations; speculations of which, all things considered, it is no undue depreciation to affirm that they are at once absurd and impious—alike opposed to reason and religion; and the regret which must be felt in making such an assertion in regard to so celebrated a man, is not a little enhanced by the accompanying reflection, that, with Lamarck and others of his school, the latter imputation would be regarded as infinitely less discreditable than the former.





Lizars sc

SIR ROBERT SIBBALD BART M.D.

1721. Ætatis. 80.

From the original Picture, by Permission of the Royal College of Physicians of Edinburgh.

Engraved for the Naturalist's Library.

MEMOIR
OF
SIR ROBERT SIBBALD.

It would be unpardonable in a work published in Scotland, which professes to include biographical notices of all who have aided the progress of Natural History, to omit the name of Sir Robert Sibbald; but we regret that, at this distance of time, few facts can be recovered respecting his personal history during the latter part of his life. In 1695, he committed to writing an account of himself, which came into the possession of Boswell of Auchinleck, Dr Johnson's biographer, who contemplated the publication of it, but this he never performed, and the M.S. is now in the Advocates' Library in this city. It has lately been printed by Mr Maidment in a limited impression of a volume of interesting scraps relative to Scottish history

published under the title of *Analecta Scotica* ;— this affords the principal authority for his life up to that date.

The family of Sibbald is of great antiquity, and the name frequently occurs in charters of the thirteenth century. George Douglas, Earl of Angus, who died in 1461, married Elizabeth, daughter of Sir Andrew Sibbald of Balgony, in the county of Fife. Of this marriage was born Archibald, Earl of Angus, father of the learned Gavin Douglas, bishop of Dunkeld, the translator of Virgil. In the reign, however, of King James the Fourth, Sir Andrew Sibbald of Balgony, sheriff of Fife, dying without sons, Robert de Lundin, a younger son of the Laird of Lundin, married Helena, his daughter and heiress, and got the estate, still retaining the name of Lundin. In King Charles the First's reign, the estate again passed into a new family, being purchased by the celebrated General Alexander Leslie, afterwards created Earl of Leven, by whose descendants it is at present possessed.*

From the younger branches of the Balgony family was Sir Robert descended, being the fifth child of David Sibbald, “third brother to Sir James Sibbald of Rankeilor, knight baronet, by Margaret Boyd, eldest daughter of Mr Robert Boyd of Kipps, advocate. His father was

* Sibbald's *Fife and Kinross*, 8vo. edition, p. 368.

deputy-keeper of the great seal, while the Earl of Kinnaird held the offices of Chancellor, after which he lived privately upon his own fortune.” He died in the year 1660, being 71 years of age, and was buried in the Greyfriars churchyard at Edinburgh. His son describes him as “a man of mild spirit, very civil, and kind to his relatives and acquaintances.” His widow survived him twelve years, dying at her country house, the Kipps, July 10, 1672, aged 66, and was buried at Torphichen in the same grave with her father, over which is the following inscription :—
“ Magistro Roberto Bodio a Kipps, jurisconsulto, qui ad antiquam sanguinis nobilitatem, insignem pietatis, probitatis et eruditionis claritatem accumulavit ; bonis probatus vixit, desideratus ad cælestum gloriam transiit, 10 Julii, 1645, Ætatis septuagesimo primo.”

“ Sub hoc etiam conditæ cippo Margareta Bodia ejusdem Roberti filia primogenitæ et conjunx Magistri Davidis Sibbaldi, fratris germani Rankillorii ; in qua præter singularem modestiam et constantiam, emicuere pietas, prudentia, et quæcunque virtus matronam decebat, ab illustrissima Bodiorum genti oriundam. Nata Januarii, 1606 ; denata, 10 Julii, 1672.” She appears to have been one of those numerous instances on record of a pious mother carefully superintending the education of her children.

How often, in perusing the biographical records of eminent men, do we see that the first germ of superior intellect has been detected by a mother's vigilance—that this has been fostered by a mother's care, till it has produced a Bacon, a Sir William Jones, a Cowper, and hundreds of others, who, but for a mother's devotion, might have descended to the grave “unwept, unhonoured, and unsung” beyond their immediate connections ; and were we to look into the private histories of thousands who, though unknown to fame, have been a blessing to their families, to their neighbourhood, and to society at large, by their religious and moral character, we should, in most instances, trace the origin of their domestic virtues to education received from a mother. “She openeth her mouth with wisdom, and in her tongue is the law of kindness.” Such an one was Margaret Boyd. “A virtuous and pious mother of great sagacity and firmness of mind,” says her son, “and *very careful of my education.*”

Robert was born April 15, 1641, at Edinburgh, near to the head of Blackfriars Wynd, and was baptized by Mr William Colvill, minister of the Tron Church parish. He was named after his mother's father ; he had two elder brothers and two sisters, who all died of consumptive complaints before they had attained four years of age, which circumstance induced his father's

brother, Dr George Sibbald, a physician, to recommend that this child should be suckled to an advanced age, which was accordingly done “till he was two years and two months old, and could run up and down the street and speak,” and proved of great advantage, as he not only escaped the threatened malady, but “passed all the diseases commonly incident to children without any manifest hazard.”

He was subjected, however, to other perils consequent upon the political disturbances of the times; he was kept at a cousin’s house at Linlithgow at the time of the plague in 1645, till the infection reached that town, when his parents removed to the Kipps. “As I went there with my nurse, we met a troop of Montrose’s men, who passed us without doing us any harm.” A few years later, a far greater danger awaited him. His parents had removed to Dundee, where they were residing at the time General Monk stormed the town. His father received a blow from a carbine, their house was plundered, and they lost all their furniture, plate, jewels, and money, and a younger sister and himself were exposed to imminent risk. She had incautiously exposed herself above a wooden building that had been erected across the street for the defence of the town, and her brother ran after her to bring her back. It speaks volumes as to the

horrors of civil war, and the utter forgetfulness of every principle of humanity that such a contest involves, that two children, the one eight and the other ten years of age, should be thought fit objects of attack. In returning, they were fired at, but providentially, the ball missed, and “lighted in the street.” “I took it up,” says the young hero, “and brought it with me.” The family were so reduced by this misfortune, that this child had to travel on foot to Cupar, where they bent their steps, having obtained a pass by the sale of some meal.

At Cupar, the year previous to the unfortunate removal to Dundee, Robert Sibbald had commenced his Latin education under Mr Andrew Anderson; but he appears not to have been replaced with him, but to have been entered at the High School of Edinburgh under Mr Hugh Wallace, from whence, in due course, he went to the university of his native city, of which the celebrated Robert Leighton, afterwards Bishop of Dunblane, and ultimately Archbishop of Glasgow, was at that time the principal. While attending the college, he studied hard, shunning all plays and amusements. He gave himself up to the diligent perusal of every book that came in his way, till he acquired the soubriquet of “Diogenes in his tub” among his fellow students. This indiscriminate reading was, in some respects,

attended with bad consequences, as it led him to the study of Sir Kenelm Digby's works "with great delight." Under the direction of Leighton, he was put upon a better course ; but it is probable that his early admiration of Sir Kenelm might have some influence upon his opinions at the time he changed his religion, Digby having, like himself, embraced the Romish faith. Be this as it may, Leighton's influence and his mother's both encouraged him in theological studies. The latter was anxious he should enter into the ministry ; but the polemical disputes at that time raging so furiously, had so completely banished all traces of Christian charity from the professors of religion, and Leighton had so impressed on his pupil the duty of loving "all good men of any persuasion," that he preferred a mode of life that would not almost necessarily involve him in the factions of Church and State.

Having chosen the profession of medicine, as one in which he could keep clear of party politics, and be of utility to his fellow-creatures, he proceeded to Leyden, at that time in high repute as the first medical university in the world. He embarked in a Dutch frigate, March 23, 1660, and remained there a year and a half, studying anatomy and surgery, under Van Horne ; botany, under Adolphus Vorstius ; the institutions and practice of medicine with Sylvius ; and chemistry

with Witichius, a German ; and afterwards, with Marcgrave, brother of the author of the Natural History of Brazil. During the college vacations, he visited Utrecht and Amsterdam ; and in September, 1661, he quitted Leyden, through Dort, to Zealand, and by way of West Flanders to Calais ; from thence to Rouen ; and so to Paris. Here he continued his studies for nine months, and proceeded to Angiers, remaining there a month for the purpose of taking his degree of M.D.* Having obtained this, he went to Orleans, and then down the Loire to Angiers, stopping at Ambois, Blois, Tours, and Somoeur, on his way ; and then back by way of Chartres to Paris. After a very short sojourn here, he set off for England, through Rouen to Dieppe, and landed at Eastborne in Sussex. He lost his father while he was in Holland.

Three months he devoted to the examination of London and its neighbourhood, and then proceeded by coach to York ; north of which city, there appears at that time to have been no public conveyances for the accommodation of travellers, as it was necessary for him to hire from thence horses *and a guide* to Newcastle. He was so well satisfied with them, that he continued them on to Edinburgh, taking the route of Jedburgh and Melrose, arriving at the Scottish metropolis,

* Diploma dated July 17, 1662.

October 30, 1662, having been absent two years and a half. Here he found his younger brother George suffering severely from a dislocation of the spine, occasioned by a person, in play, tossing him over his shoulder five years before, a practice too common, but highly reprehensible. In this poor child's case, it produced an abscess ; which, after years of acute pain, terminated fatally in the fifteenth year of his age.

The young physician, with great prudence, settled at his mother's house, determined to live as economically as possible, as his means were limited by a life-rent his mother possessed out of his father's property. His father had been compelled by the misfortune at Dundee to incur some debts, which were undischarged at his death ; which his son, with a high sense of honour, determined to discharge. To encourage such laudable moderation, he studied Seneca and Epictetus, and other of the Stoics, which he "*affected*" because of their contempt of riches and honours. "The design," he tells us, "which he proposed to himself, was to pass quietly through the world, and content himself with a moderate fortune." With this resolution, he commenced practice among his friends, and refused fees from the poor ; but courted the acquaintance of surgeons and apothecaries, "carrying himself with a great deal of deference and respect to them," for the

purpose of studying their prescriptions; and though resolved to go little into society, but to read much, he at this time formed some valuable acquaintances, among whom he enumerates Mr Archibald Hope, (afterwards Sir Archibald, and a Lord of Session;) Mr Patrick Drummond, a cousin by his mother's side, with whom he carried on a correspondence on subjects relative to Experimental Philosophy; Mr James Aird, a pupil of Leighton's, "a serious Christian;" and Mr James Fall, afterwards doctor, and first principal of the University of Glasgow. Amidst this course of life, he was seized with an alarming fever, during which his life was despaired of, but after a confinement of near three months, he recovered, and was able to resume his practice.

About four years after this, the return of Dr Andrew Balfour from France,* was the means of

* Sir Andrew Balfour was the youngest son of Sir Michael Balfour of Denmiln, in the county of Fife, and was born there January 18, 1630. He studied at St Andrews, London, Blois, and Paris, and finally obtained his diploma of M.D. at Caen, September 20, 1661. Returning to London, he was introduced to King Charles II. and was recommended by him to the office of travelling tutor to the young Earl of Rochester, a pupil who certainly reflected no credit on him; but who, on his deathbed, acknowledged the Doctor's zealous endeavours to encourage him in virtuous practices, and to restrain him from vice. During these travels, he diligently observed every thing connected with the laws, customs, antiquities, museums,

exciting Dr Sibbald to more particular attention to the study of Natural History. They had become acquainted while abroad, and congeniality

manufactures, and natural history, of the countries he visited ; and after four years absence, returned in 1667 to St Andrews, where he commenced practice as a physician. He brought with him from abroad a large collection of books, medals, mathematical, philosophical, and surgical instruments, pictures, busts, specimens of animals, plants, and fossils, a cabinet of simples for the *Materia Medica*, and other curiosities of nature and art. Here he first introduced into Scotland the dissection of the human body. He collected and investigated the indigenous plants of his native country, and was the first to disprove the absurd idea that then prevailed that the *Lepasanatifera*, or barnacle shell, was the origin of the Barnacle goose. He was also the first discoverer in the Scottish Seas of the *Tetraodon mola*, or sun fish. Removing to Edinburgh in 1670, he immediately obtained the first practice in the metropolis. About this time he united with Sibbald in the establishment of the Botanic Garden ; and afterwards promoted the New College of Physicians ; and after twenty-three years successful practice in Edinburgh, died there in 1694, aged sixty-three. After his death, his library was sold, of which a printed catalogue was published in 1699, and his museum was deposited in the College of Edinburgh, in the hall which was afterwards the old library. There it was left to rot and decay, utterly neglected, till Professor Walker, on his appointment to the Chair of Natural History in 1782, selected such specimens as time had spared, and placed them in the best order he could. And possibly some few memorials yet remain of what at the time Dr Walker states there is reason to think was the most considerable collection that was then in the possession of any university in Europe. — *Professor Walker's Memoirs, Essays on Natural History*, pages 347, 369.

of taste, soon ripened their intimacy into friendship. Dr Balfour possessed an excellent library on that subject ; and he pointed out to Sibbald such authors as he thought most worthy of his study. " I had," says the latter, " from my settlement here, a design to inform myself of the Natural History this country could afford, for I had learned at Paris that the simplest method of physic was the best, and those that the country afforded came nearest to our temper, and agreed best with us ; so I resolved to make it part of my study to know what animals, vegetables, minerals, metals, and substances, cast up by the sea, were found in this country, that might be of use in medicine, or other arts useful to human life ; and I began to be curious in searching after them, and collecting them, which I continued to do ever since."

Sibbald introduced Balfour to Mr Patrick Murray, the Laird of Livingston, a great botanist, who had collected many plants, both foreign and indigenous, in his garden, at his country seat, to which the two friends frequently resorted. Stimulated by his success, they resolved to establish a garden of their own ; and for this purpose, they rented a plot of ground about forty feet square, in the north yards of the Abbey. And having become acquainted with Mr James Sutherland, a young man, who had acquired a knowledge of

plants and medals,—both qualifications likely to recommend him to their notice— they engaged him to superintend it ; and in a very short time, they had formed a collection of between eight and nine hundred plants.

The design meeting encouragement from several physicians of the city, who entered into an annual subscription to defray the expenses, they made interest with the Town Council for a lease for nineteen years of the garden belonging to the Trinity Hospital. This, however, excited the jealousy of the apothecaries, who foresaw that it might lead to the establishment of a College of Physicians, and they strongly opposed the attempt ; but through Dr Balfour's “ dexterity,” this opposition was overcome, and the lease granted to Mr James Sutherland,—Dr Balfour, Dr Sibbald, and others, being appointed by the council visitors of the garden. These gentlemen continued their exertions, and were the means not only of obtaining the subscriptions of many of the nobility towards the expenses, but also of grants of money from the Exchequer, the Lords of Session, and the Faculty of Advocates, by which contributions they were enabled to import plants and packets of seeds from abroad ; and the medical students being encouraged to send specimens from all places they travelled to, the garden soon increased to a respectable rank.

These pleasing occupations were disturbed by

a variety of domestic troubles, caused by the unfortunate marriage of his favourite sister, and the commencement of a law-suit in behalf of his nephew. Another source of great vexation, and eventually of litigation, happened at the same time respecting the division of his grandfather's estate, which, upon his death, fell to be divided between his two daughters. The eldest was Mrs Sibbald, and the other was married to a gentleman of the name of Carriber. Sibbald, who represented his mother, claimed the house and lands of Kipps, as descended from the *eldest* daughter, but this Carriber disputed, and though the decision of the inferior courts was in Sibbald's favour, he persisted in carrying the case to the Court of Session, which decreed that part of the property to Sibbald, subject to the payment of one thousand one hundred merks to his uncle.

The possession of this estate induced the doctor to retire from town, and reside there with a view to country practice. He probably, also, in this step, studied his mother's comfort, who resided with him there for two years, previous to her death, in 1672. After that event, finding his situation lonely, he began to think of marriage, but was three or four years before he could determine on the lady. At last, "*by the recommendation of a friend*," he addressed himself to Anne, second sister of Mr James Lowes of Merchiston, was accepted, and the consent of her friends being

obtained, they were married on Thursday, April 25, 1677, he being at that time thirty-six years of age, and the lady twenty-two.

This marriage, contracted under such favourable auspices, was productive of but short-lived happiness. His wife, coming from the bed-room in slippers the following October, fell down stairs, and miscarried of twins: on the 12th October, 1678, she again gave birth to a daughter, but two months afterwards Mrs Sibbald caught a malignant fever, which, in spite of the best advice, terminated fatally on the 11th day, being December 27, 1678. She was buried in the Greyfriars churchyard; her husband records, that “she was a virtuous, and pious, and loving wife, and had just kindness for all my relations, and was much esteemed by them.”

About this time he formed an intimacy with the Earl of Perth, who, on the death of his family physician, appointed Dr Sibbald to succeed to that office. The Earl, being a man of literary taste, frequently consulted Sibbald on topics of literature and science, and was earnestly persuaded by him to adopt a life of philosophic retirement; but he had otherwise determined. Being poor he threw himself into the court, with an intention of improving his fortune, and soon obtained the appointment of Lord Justice General, which was followed by the Chancellorship. This change of

life subsequently involved his simple-minded friend in serious difficulties.

One immediate consequence of that intimacy, however, was a recommendation by the Earl that the Doctor should add to his researches into the Natural History of Scotland, an inquiry into the exact geographical description of it ; and to encourage him in the task, he procured from King Charles II. a patent,* constituting Dr Sibbald his Majesty's geographer for Scotland, and another appointing him his physician there,† accompanied by the King's commands that he should publish both the Natural History and the geographical description of the kingdom. This led him to incur great expenses in buying books and manuscripts likely to be of use, and in employing a surveyor, and otherwise obtaining original information, without any adequate remuneration, as his patents were merely honorary. James VII. it is true, granted him a salary of £100 per annum, as his physician,‡ but this he only received one year ; the trouble that ensued probably put an end to all his expectations of court favour.

In the furtherance of this work, in 1682, he published and circulated throughout the kingdom,

* Dated, December 30, 1682.

† Patent, dated, September 30, 1682.

‡ Patent, dated, December 12, 1685.

certain *general* queries, to the number of twelve, to which he solicited answers from all who were competent to give information; in addition to which, he issued five sets of *special* queries to the following classes:— 1st, To the nobility; 2d, To the clergy; 3d, To the gentry; 4th, To the royal burghs; and 5th, To the universities and schools. In reply, he received much valuable matter, particularly from M'Kenzie, bishop of Orkney, Graham, bishop of the Isles, Mr James Wallace, minister of Kirkwall, and Mr Sympson, minister, author of the account of Galloway, printed in 1823, by Thomas Maitland, Esq. advocate. The Countess of Errol, sister to the Earl of Perth, sent him a description of Brechin, together with some drawings of birds, and two engraved plates, the one of silver, the other of copper.

This was followed, in 1683, by a Latin pamphlet of twenty pages folio, which he entitled “*Nuncius Scoto-Britanicus, sive Admonitio de Atlanti Scoto*,” &c. To this is prefixed the royal patent, appointing him geographer; it contains a plan of the proposed work, with its divisions, and the titles of the various chapters; a list of the books and manuscripts he had procured relative to the subject, and a list of books and manuscripts that he was anxious to obtain, but had not been able to procure. His

general and special questions are then repeated, which concludes the book.

At the same time, he published in English “ An account of the Scottish Atlas, or the description of Scotland, Ancient and Modern,” folio.

Dr Sibbald was highly instrumental in the establishment of the College of Physicians in Edinburgh, which originated in a dispute on the part of a Mr Cunningham, a surgeon, with the company of surgeon apothecaries, who had refused him admission into their society ; in consequence of which he raised an action in the Court of Session, as to their right to exclusive privileges ; upon which the judges thought it necessary to take an opinion from four of the principal physicians in Edinburgh, Doctors Hay, Burnet, Stevenson, and Balfour : first, whether the junction of the profession of surgeon with that of apothecary was customary in other countries ; and, secondly, whether such an union was beneficial or not. In an affair of so great importance, the gentlemen appealed to consulted with the other physicians before drawing up their report, and to debate the matter, they called a general meeting of the profession, to meet at Dr Hay’s house, when they came to a resolution that there was no such union of these departments in other countries, and that such an union was “ very prejudicial,” both to the public *and to the physi-*

cians. The business being concluded, Dr Sibbald suggested, that as that was the first occasion on which they had all met together, the meeting might be improved for their general interest: was it not possible to form a collegiate establishment, not only to secure their own privileges, but to resist the encroachments of these obnoxious apothecaries? The idea was favourably received, and frequent meetings were subsequently held to consider of the best mode of proceeding.

No event could have happened more favourable to their views than the arrival of the Duke of York at Holyrood, followed by Sir Charles Scarborough, his majesty's principal physician, to whom they immediately applied, and who promised to afford them every assistance both with the King and the Duke. This high patronage alarmed the corporate bodies of the city, who thought themselves likely to be aggrieved by the new college; and the magistrates, the university, and the surgeon-apothecaries, all strenuously opposed the design, together with the bishops and many of the nobility. Sibbald's influence with the Earl of Perth, and his brother, Lord Melfort, however, was the means of winning over many of the nobility. He also recovered a warrant, upon this subject, of King James the Sixth, dated July 3, 1621, directed to the Commissioners and Estates of

Parliament, then sitting in Scotland, and a reference by the Parliament to the Privy Council, dated August 2, 1621, authorizing them to act in the business as they thought fit, and promising that their determination should have the form of an act of Parliament ; and producing these instruments to the duke, he immediately pledged himself to see their claims established. The magistrates and surgeon-apothecaries still opposed the new institution, and argued their objections before the Privy Council. The university and the bishops were soothed into compliance by a promise, that certain conditions favourable to them should be inserted in the patent, so that they not merely withdrew their opposition, but became “strong solicitors” in its favour. With such powerful aid, the matter was at length carried, and a draught of the patent being agreed to, was sent to London for the king’s sign manual. The day after its return, Sibbald translated it into Latin, and sent it to the Court of Chancery to be transcribed on parchment, and the great seal was appended to it at Edinburgh, November 29, 1681. The names of the first fellows inserted in the charter are,—David Hay, Thomas Burnet, Matthew Brisbaine, Archibald Stevenson, Andrew Balfour, *Robert Sibbald*, James Livingston, Robert Crawford, Robert Trotter, Matthew Sinclair, James Stewart, William Stevenson, Alex-

ander Cranstoun, John Hutton, John Macgill, William Lauder, John Learmonth, James Halket, William Wright, Patrick Haliburton, and Archibald Pitcairn — in all twenty-one.

What method was adopted in the arrangement of the names, we have no means of knowing. The gentlemen who had originally been consulted by the judges as the four principal physicians, are not precisely those whose names first occur in the patent, neither are they those of the number who principally exerted themselves in the attainment of the charter, as they were Drs Stevenson, Balfour, and Sibbald, who stand fourth, fifth, and sixth in order. They were also at greater expense than the others ; for when it became necessary to call upon each member to subscribe towards the expense that had been incurred, Dr Hay, whose name was inserted first, absolutely refused to contribute any thing ; and Dr Brisbaine followed his example : these two were therefore declared to be merely honorary members. And in the beginning of the year 1682, Drs Stevenson, Balfour, and Sibbald, the three gentlemen who had, during the settlement of the transaction, been brought under the private notice of the Duke of York, received the honour of knighthood. This was entirely unsolicited, and even unexpected, on their part. As they were merely desired, on a Saturday night, to

wait on his Royal Highness the following day, after morning service, they supposed it was upon business relating to the new college ; but, says Sibbald, “to our surprisal, there was a carpet laid, and we were ordered to kneel, and were each of us knighted by his Royal Highness, then Commissioner.” They were indebted to the Earl of Perth and Sir Charles Scarborough for the honour.

Sir Robert Sibbald was requested by the college to return thanks, in their name, to his Royal Highness, for the charter — which occasioned him, he says, “much envy, that he was taken notice of at the court.” He soon after presented the new society with three shelves full of books, among which were the works of Galen and Hippocrates, and Gesner’s History of Animals. And now, having remained four years a widower, he again married, in November, Anna Orrock, youngest daughter of the Laird of Orrock.

On the 20th March, 1684, Sir Robert suffered a serious loss by the burning of his house. The fire originated in the *flat* overhead ; and by Sir George Mackenzie’s advice, he instituted an action against the tenant, to recover the amount of the damage sustained, but afterwards was advised to withdraw the suit. He estimates his loss at ten thousand merks. In the course of this year, his *Scotia Illustrata*, upon which he had been long

engaged, was published ; and he gave away nearly seventy copies in presents, two of which, in extra binding, for which he tells us he paid one guinea each, he sent to the King and the Duke of York. Dr Johnson has spoken of Dryden's economy of flattery as at once lavish and discreet, because he dedicated his translations of the *Pastorals*, the *Georgics*, and the *Æneid* of Virgil, to three different noblemen. Sir Robert Sibbald had, many years before Dryden, in this book, adopted the same plan, as he dedicates the whole work to the king, and the two halves to the Duke of York and the Earl of Perth respectively. Indeed, the doctor's court education was at this time rapidly thriving ; but this is too important an affair to be given in any other words but his own. It is necessary to premise, that the circumstances occurred immediately after the accession of the Duke of York to the throne of Great Britain by the title of James the Second, who commenced his reign by sending an agent to the Pope, to solicit the admission of the kingdom into the bosom of the Romish Church ; and that the Parliament of Scotland, under the management of the Duke of Queensberry, as High Commissioner, and the Earl of Perth, as Chancellor, made a complete resignation of their liberties to the Court. The duke, says Hume, “ had resolved to make an entire surrender of the liberties of his country,

but was determined still to adhere to its religion. The earl entertained no scruple of paying court even by the sacrifice of both." But let us hear Sir Robert Sibbald.

" Now I come to the difficultest passage of my life. The friendship I had with the Earle of Perth was come to a great hight, though I had improven it only for the good of the Colledge of Physitians, and done very little for the bettering of my fortune by it. I admired too much him, and gave full scouth to my affection for him, without considering him more narrowly: by my extroversion towards the concerns of the Coledge, and greate persute after curious booke, I had lost much of the assiet and firmnesse of mynd I had formerly, and had by his meanes been ingadged in a controversie about the antiquity of our Country and our Kings, upon occasion of the Bishop of Asaph, his reflections upon them. This had taken me much up, for I wrott two booke in vindication of our history and historians upon that account, one in answer to the Bishop *κατα ποδάς*, and the other a vindication of our history, and the contraverted points more regularly. This had occasioned in me some contempt of the English Clergy upon that account, and some prævarications of some of our own folks upon some heads, had loused the attachment I had for our owne Religion. The

Earle had many tymes signified the aversion he had for some of the doctrines of the Church of Rome, and I was secure upon that head, although both he and I thought ther wer many great and good men amongst them ; bot behold, (how it was brought about the Lord knowes,) he had declared himself of the Romish faith, and joined in ther worship some two moneths befor I knew it. At last one Sunday he had taken physick, he took the opportunity, wee being alone, to tell me, weeping, that he was of that persuasion, and that no consideration of worldly interest had induced him therto, but that he was convinced it was the true and the ancient Church. Though I was much surprised at this, yet I told him I could not but have the charity to believe it was so as he told me, for I thought there could be nothing more contrary to his interest then that was ; he said he was sensible of it, and had offered with great earnestness to resigne his place, but the king had commanded him, upon his allegiance, to continue in his post. This did occasion odd thoughts in my mynde ; yett I thought whatever he did, I could do better to continue in the church I was born and bred in. I never had met with any of the Romish Clergie, nor spoken with any upon their doctrin, and was secure, when in the begining of September, 1685, he carried me alongst with him

to Drummond, to see his Lady, who, after a long languishing sickness, was then dying. I knew nothing of it, bot he told me afterwards, that the very next day after her arrival, he brought her over to the Romish persuasion. Good Lady, she, I believe, did it out of the love she had for him, and took it for granted that ther was no more in it then that she sould be saved only by the merits of her Saviour; and I saw nothing bot this suirer perswasion the few dayes that she lived, except that she assented to them as of the true Catholick's Church, and joined in their worship and service. Bot all she said herself that I heard, was what any Protestant believed, and used in the agonie of death to say. So she died, and ceremonies were used at her death.

“ The next day after I arrived at Drummond, he had given me the *Lyfe of Gregory Lopez*, and of *Father Davila* to read. I read them with great admiration of ther piety and austerity of lyfe; and one day thereafter, as we were walking, he fell a speaking of religion, and of the Romish way. I told him I had a great charity for all good men of that persuasion, and I thought I had most aversion for their want of charity for those were out of their church. He told me, they believed that any good man of a different way from them, that had a sincere love to God, would be saved. I said I was well pleased to hear that.

About xi a clock, he called me up to his studie, and there he read to me a paper that the Duchess of York had writt upon her embracing that religion, and discoursed very pathetically upon it. I knew not how it came about, I felt a great warmness of my affections while he was reading and discoursing, and thereupon, as I thought, *oestro quodam pietatis motus*, I said, I would embrace that religion, upon which he took me in his arms and thanked God for it. This was the way, without any furder consideration, that I joined with them, and signified my willingness to join to the priest when he came. After that, I frequented their service, and became seriously enamoured with ther way ; and notwithstanding the great opposition I mett with, from all my relations and acquaintances, I continued more and more resolute, and professed I had joined with them.* Ther Churchmen were not of

* This account of Sibbald's conversion is very interesting, and although he turned Papist at a period when his motives were naturally ascribed rather to a desire to find favour in the eyes of a bigoted monarch, than to any internal conviction of the truth of the Catholic religion, still his narrative has such an air of truth, that it is difficult to disbelieve the writer. Besides, in forming an opinion on the subject, it ought not to be overlooked, that Sir Robert publicly abjured the errors of Popery prior to the abdication of James. In the *Scottish Pasquels*, vol. iii. p. 62, Edin. 1828, 12mo. will be found a severe satire upon Sibbald, written by *Dr Pitcairne*.—*Note by Mr Maidment in the Analecta.*

any great learning, knowing for the most parte only the scholastic philosophie and theologie, bot some of them were very devout in ther way, and spent most of their time in publick or private devotion, and acts of charity, which increased my esteeme for them. They were too forward in their methods, and I told them, their having their service upon the streets might occasion them more trouble than they were aware of; bot they did in that more like bigots than wise men, and provoked the Rabble against them and me.

The Rable judged I had made the Earle of that persuasion, and vowed to be avenged on me; and accordingly the first of February, while I was sitting in my own chamber, reading, they came in a tumult to my house to assassinate me. I had been warned of their designe in the forenoon by a Lady that overheard them swear they would kill me, and had thereupon made my will, and prepared myself for death; and when they came to force their entry to the house, three or four hundred of them, I fell upon my knees, and commended my soul to God, and went out at the back door of my house, not doubting but that they might fall upon me and kill me. It pleased God, Mistress Kyle who lodged below me, heard me come out, and gave me the key of the yard, so I escaped by leaping my yard dyke, and lying in the braes at the foot thereof, till

some searching for me, of our owne people, I joined them, and came home. They had broken up the utter door, and soon after the other door was opened to them ; they entered with durks and axes, and for-hammers, and one fetcht a stroak with a durk to have killed my wyfe, bot was hindered by one that told she was a Protestant. They searched the Bed, and not finding me, went away, after they had sworn they would ' Rathillet'* me. I was conveyed down to the Abbey by Lieutenant Generall Drumond in his coach, with Claverous, who was then Viscount of Dundee, and finding the spighte continued against me, I took journey with Lieutenant Drumond of the lyfe guard, and went to Berwick, where I mett with the Earl of Traquaire, Mr Irwin, and Mr Lindsay, and wee road post to London in six days. At Stonegate hold we perceived six Highway men, three upon each side of the road, waiting for us : we rode through them without any harme. At Stamford, after we had mounted our horses, and were riding out

* An allusion to the murder of Archbishop Sharpe, in which Halkerston of Rathillet was a principal actor. Hence, the populace adopted the phrase "to Rathillet" in lieu of "to assassinate," and as more forcibly expressing the same thing. In like manner, the word "Burked" has recently come into general use, as indicating the peculiar mode of assassination by suffocation, used by that execrable miscreant, William Burke. — *Note by Mr Maidment.*

of the Towne, my horse chanced to rub upon a dragoon: he persued me with a drawen Bagonet to stryke at me; I turned about, and made my excuse, bot he still persued me, so I put to the horse and escaped. When I arrived at London, I was carried the next night to court, to kiss the King's hand. He spoak very kindly to me. I prayed God to preserve and blisse him, and sayd no more, and never went to him after that, for I heard they thought I had gone to court to sollicite for the Romanists, so I keeped out of it, and gave myself entirely to devotion while I was at London."

After remaining in London eight or nine weeks, he became severely unwell with cough, rheumatism, and erysipelas, which he attributed partly to cold caught from lying out that night the mob broke into his house, and the fatigue of his journey to London, which was on horseback, and partly to his rigid fish diet during Lent, consequent upon his change of religion. Illness produced its usual beneficial effects upon the heart, and he saw clearly the impropriety of the step he had so rashly taken. "I began to think I had been too precipitant in declaring myself of the Romish faith, though I joined in the simplicity of my heart." "I perceived also the whole people of England was under a violent restraint then, and I foresaw they would overturn the Government. The Jesuits who had the greater

influence at court, pressing the king to illegal and unaccountable undertakings, and opposing the taking of the allegiance, which I was bound to by oaths. Upon which considerations, I repented of my rashness, and resolved to come home, and return to the church I was born in." And being too ill to travel by land, he set sail for Leith, and after a passage of eight days, arrived safe. " When I was come home, I wrote to the Chancellor my resolution, and declared it to some who visited me. And I went no more to the Popish service, but removed to the country, and went to church. And in September following, I was received by the Bishop of Edinburgh, (upon my acknowledgement of my rashness,) in his house, and took the sacrament, according to the way of the Church of England, and kept constantly my parish church."

There is always a suspicion as to the purity of the motives of any sudden political or religious conversion that takes place under circumstances favourable to the worldly interests of the converted ; and it must be confessed, that, in Sibbald's case, these suspicions might very justly be regarded at the time in the most unfavourable point of view. But in looking back calmly and dispassionately in the present day, to his own narrative, there is no reason to doubt his integrity, or the sincerity of his convictions, at the moment

he embraced the Romish faith, whatever opinion may be formed of his discretion, judgment, and strength of mind ; he gave way to his feelings without guiding them by reason. Indeed, there is little doubt, that he was all along marked out as the tool of Perth, and, perhaps, also of James himself. His education had probably peculiarly exposed him to the Jesuitical attacks of his wily patron. We have seen that, early in life, he had studied with great delight the writings of Sir Kenelm Digby ; and Digby himself had, to use the current phrase, “ been reconciled to the Church of Rome ;” while the axiom he had imbibed from Leighton, “ of loving all good men of every persuasion,” had been, perhaps, too incautiously received. It is an opinion that requires to be guardedly advanced, especially towards young persons, as it may lead to an idea that all forms of religion are the same ; besides it requires a previous consideration of what constitutes a good man, or in other words, what are to be considered *fundamental principles*.* That

* “ The misapplication of the word candour was more injurious in its effects on religious sentiments than can now be well conceived. It was supposed to possess indescribable virtues. Candour was sounded from many a pulpit ; and like charity it was supposed to hide a multitude of sins. An orthodox minister, who had candour, was to believe that an Arminian or Socinian was a very good man ; and that if he was sincere in his opinions, and not rigid in condemning others, he ought not to be condemned himself. The influence of this idea was exceedingly pernicious ; for it led to an indifference with respect

Leighton, whose “ high toned spirituality made him overlook the importance attached by vulgar opinion to the outside forms and fashions of religion,”* should diligently inculcate such advice at a period when bitter hatred and rancorous hostility against each other had completely excluded pure Christian charity from the bosom of all sects, is scarcely to be wondered at, but such opinions may be overstrained ; and in his own person, they led even him into compliances that were scarcely consistent, and which have to this day left a blot upon a name otherwise resplendent for piety and virtue. It is worthy of observation also, that there are many points of Leighton’s character, and tone of thinking and writing, that may be considered favourable to the Romish *ritual*, though not to its faith.† His own to truth and error, which depraved both their sentiments and dispositions, which relaxed the springs of Christian integrity and conduct, and gradually brought them to call good evil and evil good, to put light for darkness, and darkness for light.”— *Bogue and Bennet’s History of the Dissenters*, vol. ii. pages 305-6, second edition.

* Pearson’s Life of Leighton.

† The following quotation from Pearson’s Life will justify the remark in the text,— “ Leighton was not by nature morose and ascetic ; yet something of a cloisteral complexion appears to have been wrought in him by the character of the times, and by the society of men like-minded with himself. He plunged into the solitudes of devotion, with a view to escape the polluting commerce of the world, to gain the highest place of sacred contemplation, and to maintain perpetual intercourse with Heaven. That he was no friend to monastic seclusion is certain. He reckoned the greater number of the regular clergy in

brother was a Papist, and by his advice, grounded on mercenary views, the king had selected Leighton for a bishoprick. What degree of influence the example of the tutor might have upon the mind of the pupil in this transaction, there may be a difference of opinion ; but we think that it had some. We are justified in supposing Sibbald's aberration was of but short continuance ; and it

Roman Catholic countries to be little better than *ignavifures*, rapacious drones ; at the same time that he recognized among them a few specimens of extending growth in religion, and *thought he had discovered in the piety of some conventional recluses a peculiar and celestial flavour which could hardly be met with elsewhere. Of their sublime devotion he often spoke with an admiration approaching to rapture.*" P. 58.

" There was ' a current report that Leighton was not unfriendly to some parts of the pontifical constitution,—a report which seems to have taken its rise from his paying occasional visits to the college at Douay, and to have been countenanced by his celibacy, his ascetic habits, and an admiration for some of the disciples of Jansenius, which he was too high minded and ingenuous to dissemble. It was, indeed, more than insinuated that he was too liberally affected towards the Catholics for a stanch and thorough Protestant ;' and the commendation he bestowed on the writer of Thomas à Kempis *in his public lectures*, did not escape some animadversion," p. 16. The writer of this, himself an Episcopalian, trusts he shall not be misunderstood, or supposed intending any thing derogatory to the exalted character of Leighton, by selecting these extracts, still less of insinuating that he was inclined to Romanism. He merely produces these passages in proof of the bishop's laxity on points which, coupled with *his* superior religious attainments, he might justly regard as matters of inferior moment, but which, in the eyes of the world, should always be respected, and in a teacher of youth it was surely injudicious to despise.

is an additional proof of his integrity, that his abjuration of the errors of Popery was as public as possible,* and occurred while the king was pursuing its extension with the utmost vigour of his power. He deeply repented his fault, and it ultimately proved beneficial to himself, as exhibiting to him his own weakness and dependence for strength upon a higher power. “I thank God,” he adds, “who opened my eyes, and by my affliction gave me the grace to know myself and the world, and to take better heed to my ways, and to amend my life.”

In times of affected liberality, like the present, we would urge on every educated person the duty of forming their religious principles, *not* from the example of men, as they may happen to be born in one part of the British dominions or another; but, like the Bereans, let them search the Scriptures, to ascertain whether these things be so or no. Let them not “follow cunningly devised fables,” but be able to give a reason for the hope that is in them. Let them thus form a standard by which to test all things; and having thus satisfied themselves of the truth and importance of the principles they maintain, they will not be liable to be blown about by every wind of

* The news immediately reached London, as we find Evelyn, in his Diary under that year, recording that “The King’s chief Physician in Scotland, apostatizing from the Protestant religion, does, of his own accord, publish his recantation at Edinburgh.”

doctrine, the prey of the artful and designing, till they ultimately become a mark for the finger of scorn, or an object for the tear of pity,

To point a moral or adorn a tale.

But it is time to quit this unfortunate period of a life otherwise devoted to the benefit of his fellow-beings. While he was in London, Sir Robert Sibbald was created a fellow of the College of Physicians there, and he at the same time formed an acquaintance with the Honourable Robert Boyle, who ever after forwarded to him copies of his different publications.

Nothing more can be traced of Sibbald's personal history. What has baffled the inquiries of Mr Maidment and Mr Laing,*—two of the most indefatigable and intelligent literary antiquaries of Scotland,—it would be vain for us to attempt to supply: we can only, therefore, add a few letters to Wodrow, the Church historian, on subjects connected with Natural History, written about the period of his life to which we have now arrived.

Edin. 13th May, 1691.

REVEREND SIR,—I am glad to hear from Doctor Izet that you are in good health, he told

* To Mr Laing we beg to return our best thanks for kindly placing at our disposal his curious collections relative to Sibbald, which, to any one investigating the literary and antiquarian history of that time, are invaluable, but which we were prevented from making much use of from the limits to which it is necessary to reduce the present Memoir.

me of two whales came in at Culross shortly. I must entreat yow to putt your nephew on it to gett me the best account of them. The Doctor sayeth the Schoolmaster can give the best description,—if Mr Creigh or any other ther can helpe to it, I pray yow cause speak to them. I would be informed of ther shape, the figure of ther head, the number of ther fins, and whether they had teeth both in the under and upper jaw, and some of them would be sent,—the difference of the teeth would be marked, and if the other of them had Baleen or teeth different from the other. Whither ther was any spermacety in ther heads,—if any thing was gotten in ther stomach,—and the shap of ther stomach, the lengthe of ther body, and some of the bones toward the tail would be sent. If they be so that they may be worth the sieing, I would come over on purpose to sie them, but it's lyke your answer will satisfie my curiositie here. I wish yow all happienes, and I am, your assured friend and humble servant,

R. SIBBALD.

For the Reverend Mr James Aird
at Torriburn. These.

ACCOMPT FROM ALEXR. DRAYSDALE, ONE OF
THE CUTTERS.

The name of it is a fine fish, the shape was much like ane mane swine, the head of the same

species, the number of the fins were fyve, two on every side, and ane small one on the back, they had teeth both in the upper and neather jawes, on the tope of the head there was about ten inches of pure fatt, and in the eye holl there was about a foott and ane halfe of fatt, even to the very tongue roots, the teeth wer of a like bignesse, none of them had balen, both of them had a like teeth : he can give noe accompt of the spermaceti, onely the head was full of brains, part thereof being bronish colored and not fatt, they were, the one was three fathoms and some more, the other two fathoms ten foot, the collor of the fishes were like to a speckled horse smoth without scales, the leane of the fish was like to leane beaffe, the shape of his bodie was like to an other whale, the head was great at the craige, and drew narrow at the mouth, somewhat long jawes, haveing in the upper jaw shirtie teeth, and betwixt every one of these there was a voyde to receive the tooth in the neather jaw, his eyes were directly like ane cow's eye, placed in the upper part of his head, his lenth was eight ells, he had a great fine on his back about ane ell and more of lenth even up from his back, with a fine in every side of his bellie : his bellie was white as snow, the rest of his bodie was blackish colored, with a large white spot on each shoulder, his virga was as bige as ane mutchen stoope, and neer ane ell of lenth, not soe white as

the bellie, nor yett soe black as the rest of his bodie, the taill had lairge whyte spotts on each syde.

Edin. 11th Novr. 1699.

SIR, — I gave yow many thanks for the inscriptions yow sent me and the fossils. I have not Lister by me to compare them and give yow so perfect ane account as I could wish, but yow shall haue my owne thoughts. These in the Number I. I take to be Pectenculites.

These of the Number 2nd. which taper somewhat, seem to me to be fragments of the Belemnites ; in the 3 paper there is a Nerites, and with it the radiolus of ane Entrochus very pretty.

Number 4 is a collection of Entrochi.

Number 5 is Entrochi compressi et magis compplanati.

Number 6 seem to be Turbinat, but are so broken, that I cannot reduce them to a certain tribe. I could wish to haue some of them inteir.

I ame glad yow haue found another Roman inscription, I beseach yow to let me haue a copie of it, and ane account of Caderwood's MS. History yow haue. I must confess I never saw yet any satisfactory account of the original 5 or 6 stances, though ther be severall ingenious hypotheses about them which yow are acquaint with. Wee haue gote here some poems of

Buchanan were never printed. Ther is a satyre against the Cardinall of Lorain, of ane 153 Heroick Verses, and some others, which, if Mr Mosman's designe holds of printing all his works in a fyne letter and great paper, will make ane addition to this edition, all befor it wanted. What may be worthy your knowledge I may heare of, shall be transmitted to yow by, your assured friend and humble servant,

R. SIBBALD.

Edin. 31st August, 1700.

SIR, — I am very much oblidged to yow for your many favours. I haue been much taken up of late with business, and oftene out of town, so I could not writt to yow till now. I thank yow for the use of your copie of the description of Orknay, which I have read and delivered back to Mr Paterson, to be sent to yow. Ther is very little materiall added to the 2d edition, except that paper relating to the Sinclares. I ame reading Sir James Turner's Animadversions upon Buchanan, and shall take care of them. I am very glad to see your proficiencie in the studie of Natural History and good learning, and shall be glad to my power to doe what I can for your incouradgement. That in the substance like Corall, in N. I. is indeed Coralloides, a concretion I have seen long since brought from Cartyre

and other parts. I have seen a lump of the bigness and shape of a Gouf ball. Num. 2 is the Corallina which is common every wher. I have seen of it red and purplish. It is used for the worms in children. Num. 3 is thought to be the uterus of a skate, the fishers call it the skate's purse. I ame very well pleased with thes curious stones Mr Lloyde heth sent me, the same yow mention, and I judge have receaved from him. I ame persuaded yow will find these and many more curiosities, upon application and search in severall places of the country. I shall intreat yow withall to take notice of all the ancient monuments, the inscriptions, medalls, or other pieces of antiquity, found alongst the Roman Wall, near the tract of it, or the Roman Garisons in your parts, and lett me be acquainted with what you meet with. Mr Lloyde his letter heth lyen so long at Belfast, (being written the 2d of Aprile) I think by his to me, he may by this tyme be out of Cornwall, gone for litle Britannie in France. He designed to goe ther to observe the resemblance and approache of the language ther, to that in Cornwall and Wales. He is a learned and ingenious gentleman, and his work will be very acceptable to the learned in these kingdomes. I shall be glad to have your account of that extraordinarie stone yow mention. When yow come here, yow shall have a share of some of my collections yow

mention at your own choice. I have neer finished ane edition of Arator from the excellent MS. I have. I am expecting some observations and notes on him from a learned Swedish gentleman, who wrote to me about the edition of Arator from England. I shall acquaint yow of what I gett when they come to my hand ; and now I have prepared ane edition of our countrieman, Sedulius, from ane excellent manuscript copie of it with notes in parchment belonging to the Lawers Library. I purpose to add to it Sedulius his paraphrase in prose published by himself, a printed copie of which I have, and the notes of Antonius Nebrissensis, and others, so it will be lyke one of the poets done for the Dauphin. They are excellent poets, especially Sedulius, and I hope they may be of use for the young students for fixing in ther mynds the great truths of Religion. I think this may, with the blessing of God, be one mean for the reformation of manner, (happily begun in the neighbour kingdome,) wished for by all good men in that country. Mr Andrew Simpson heth promised to make a faire and correct edition, if he may have incouradgement from the schools and colledges. I ame hopeful yow will take pains to procure subscriptions in Glasgow. I intend Sedulius shall be first published, he being lyke to be best welcomed here, and having so many advantages above the others, tyme may

gett us more for Arator, and I shall doe what is in my power to compleet the edition of him too. I shall intreat yow to continue your correspondence, although I cannot promise to writte so oftene as it were neadfull. I shall from tyme to tyme advertise yow what may be worthy your knowledge, either by a lyne from myself, or from Mr Sutherland, or Master Paterson. I wish yow all happeness, and am, your assured friend, and very humble servant,

R. SIBBALD.

Let me know when yow heard from the Arch-deacon of Carleile, and what he writeth to yow. I could wish yow would see to gett a Grammer of the Irish tongue, and send it to us: it were worth your pains to learn that language, it might be of use in retrieving our antiquities. Farewell.

Edin. 24th Sept. 1700.

SIR,—I received yours yesterday, and would delay no longer a returne to it. What yow call the Mairdmaid's purse is judged by all (I discoursed with) to be the uterus of a skate. Ther are many sorts of skate frequent our seas, and the sealchs and meerpoyne and poirpoises devour a great many of them, which may make them be so frequently found. The membranaceous substance is animal, and the

stringe are the ligaments and the tubes belonging to it. I shall be glad to see what yow call Echinus Cordatus Major, or the Marmaid's Box, I suppose it is so tender it must be sent in a small buiste. I take it to be a sort of the Echinus Spatagus, however it is fitt to know the names the vulgar give, and their opinion of these things, tho' they mistake oftine. I shall intreat I may not be named in the edition of the Christian poet, it will be tyme enough to mention that when it is a printing. Sedulius will be first published as being thought to be the better poet and a Scotch Man, and any proposall yow think fitt to make may be, for a new edition of Sedulius Scotus, his Mirabilia Dei, corrected from ane excellent Manuscript copie in parchment of betuixt six hundred and seeven hundred years old, done about the tenth age. This to be printed by Mr Andrew Simpson, on good paper, and a fine letter, in Octavo, with choice notes and prolegomena concerning the author and the learned's opinion of his work. It may take neer a quair of paper in print: the subscribers to have it in sheets for twenty shillings Scots, they advancing presently at their subscription the half, ten shillings Scots. If yow can gett about ane hundred subscribers, Master Sympson will, upon your paying in fiftie pounds Scots, give yow securitie to deliver a hundred copies upon the payment of the

other half of the price at the delivery. If this be done, he will take care to provide a new letter for it and good paper, and the fiftie pounds Scots will goe to defray part of that charge. Arator will not come out till wee see how this of Sedulius is wellcomed. My part of the work of Sedulius is neer done already. If yow can doe anything at the Synode or with your scholars, name not me bot let the undertaking be in Mr Simpson's name and your owne. I shall be glad to hear what may be done in this. I wish yow all happiness. And I ame your assured friend and humble servant,

R. SIBBALD.

If you gett subscriptions for that number with yow, it is like Mr Simpson may get as many here. I never saw either ane Irish grammer or dictionarie. I ame told ther was a Grammer printed abroad, but not very good.

The exact period of Sir Robert's death is not known ; but it is presumed to have occurred in the year 1722, as in the latter part of that year was published, “Bibliotheca Sibbaldiana ; or a Catalogue of Curious and Valuable Books, consisting of Divinity, Civil and Ecclesiastical History, Medicine, Natural History, Philosophy, Mathematics, Belles Lettres, &c. with a curious Collection of Historical and other Manuscripts,

being the Library of the LATE Learned and Ingenious Sir Robert Sibbald of Kipps, Doctor of Medicine. To be sold by way of auction, on Tuesday, the 5th of February, 1723, at his house in the Bishop's Land in Edinburgh, where placards will be affixed.

“The time of sale is to be from two of the clock to six in the afternoon.

“The Books may be seen eight days before the auction.”

The catalogue of the printed books occupies one hundred and thirty-five pages in quarto, and of the MSS. five more. The latter were sold in the gross for £260, and were purchased by the Faculty of Advocates, who also bought many of the printed books, expending altogether £342, 17s. sterling at the sale.

We shall conclude this Memoir with the following anonymous summary of his character and services to science and literature, published in a Sketch of the State of Scotland during the seventeenth century, in the Scots Magazine.

“Sir Robert Sibbald was a man of as pure intentions, and of as indefatigable industry and ardour in the pursuit of science, as any age has ever produced. Though not possessed of the genius of Pitcairn, and of several other eminent contemporaries, he had equal, if not superior, habits of industry and application to those philo-

sophers who, in his time, cultivated the knowledge of nature. The effect which such a man produced was incalculable : the sole object which he seems to have had in view, was to promote the progress of science, and thereby to benefit mankind. Towards the end of the seventeenth century, his celebrated friend and associate, Sir Andrew Balfour, died, who, together with his brother, Sir James, the Lord Lyon, were great encouragers of learning, and collectors of whatever had a tendency to illustrate the history and antiquities of Scotland. The library of both brothers was sold by auction in the year 1700. Whether the Balfour MSS. now in the library of the Faculty of Advocates, were purchased at that sale, or presented to that honourable body, I know not, but they constitute the most valuable part of that extensive collection. The Balfours and Sibbald had a great taste for antiquarian research, and, indeed, may be considered as the first who excited the attention of the public in this country to those studies. Natural History, as we have already seen, was no less diligently cultivated by them ; and they seem to have been more generous than collectors sometimes are. Sir R. Sibbald presented to the University of Edinburgh, in the year 1697, a great variety of natural and artificial curiosities, both domestic and exotic, and published, at the expense of the university, a treatise

consisting of two hundred and sixteen pages, giving an account of them, entitled, ‘Auctarium Musæi Balfouriani e Musæo Sibbaldiano.’ Thus this excellent man must be considered as the founder of the museum in the university, and was among the first, if not the very first, after Dr Morison, who published in Scotland an Introduction to Natural History. Under his auspices, Mr James Sutherland, intendant of the physical garden, and who has been already mentioned, published, in 1683, ‘Hortus Medicus Edinburgensis,’ consisting of nearly four hundred pages. From the dedication and preface, it is very plain that he had profited by the plan, which had originally been projected by Drs Balfour and Sibbald. To Sibbald, the University also owe pictures of Charles the First and Second, James the Seventh, and Earl of Perth, Drummond of Hawthornden, Sir George Mackenzie, and of the celebrated Buchanan, and the two Bodii.”

The published works of Sir Robert Sibbald are considerable in numbers, and they are varied in their subjects. We subjoin a list of the whole, so far as they can be obtained. The “*Scotia Illustrata, sive Prodromus Historiæ Naturalis*,” is more particularly devoted to Natural History. It is a thin folio volume, published in Edinburgh in 1684, and is divided into two books, the last

of which treats of the Zoology and Mineralogy of the country. It is illustrated by twenty-two plates, executed by G. Main and Reid, in the rough and unfinished style of the period, and contains three hundred and ten pages, besides the plates.

The engraving prefixed to this volume is from an original painting, presented to the College of Physicians in this city, on the 1st of May, 1744, by Lady Duntarvy, a daughter of Sir Robert Sibbald.

WORKS OF SIR ROBERT SIBBALD.

Disputatio Medica de variis Tabis specebus, Lugduni Batavorum; 1661. 4to.

Nuncius Scoto Britannus; Edin. 1683. Folio.

An Account of the Scottish Atlas; Edin. 1683. Folio.

Scotia Illustrata, sive Prodromus Historiæ Naturalis, &c.
Edin. 1684. Folio.

Again, 1696. Folio.

Phalainologia Nova, &c.; Edin. 1692. 4to.; reprinted at the instigation of Pennant in 1773.

An Advertisement anent the Xiphias, or Sword Fish, exposed at Edinburgh.

An Essay concerning the Thule of the Ancients; Edinburgh, 1693. 12mo.

Camden's Britannia, Additions to edition of 1695.
Folio.

Introductio ad Historiam rerum a Romanis gestarum, &c.;
Edin. 1696. Folio.

Auctarium Musæi Balfouriani, e Museo Sibbaldiano, &c. ;
Edin. 1697. 8vo.

Memoria Balfouriana, &c. Edin. 1699. 8vo.

Provision for the Poor in time of Dearth, &c. ; Edin.
1699. 8vo.

An Advertisement anent a rare sort of Whale come in
near Cramond ; 1701.

Coelii Sedulii Scoti poemata sacra ex MSS. &c. ; Edin.
1701. 8vo.

Georgii Sibbaldi, Regulæ bene et salubrita vivendi, &c. ;
Edin. 1701. 8vo.

Commentarius in Vitam, G. Buchananii ; Edin. 1702. 8vo.

The Liberty and Independence of the Kingdom and
Church of Scotland Asserted. Three Parts. Edin.
1703. 4to.

An Answer to the Second Letter to the Lord Bishop of
Carlisle, &c. ; Edin. 1704. 8vo.

In Hippocratis legem et in ejus Epistolum ad Thessalum,
&c. ; Edin. 1706. 8vo.

Historical Inquiries concerning the Roman Monuments,
&c. in N. B. ; Edin. 1707. Folio.

The Histories, Ancient and Modern, of the Sheriffdoms
of Linlithgow and Stirling ; Edin. 1710. Folio.

An Account of the Writers, &c. which treat of N. B.
Two parts. Edin. 1710. Folio.

Miscellanea quædam eruditæ Antiquitatis, &c. ; Edin.
1710.

Vindiciæ Prodromi Historiæ Naturalis Scotiæ ; Edin.
1710.

History, Ancient and Modern, of the Sheriffdoms of Fife
and Kinross ; Edin. 1710. Folio.

Reprinted, Cupar Fife ; 1803. 8vo.

Commentarius in Julii Agricola Expeditiones ; Edin.
1711. Folio.

Conjectures concerning the Roman Ports, &c. in the Friths of Forth and Tay ; Edin. 1711.

Specimen Glosiarii de Populis et Locis N. B. ; Edin. 1711. Folio.

Series rerum a Romanis, post avocatum Agricolam, &c.; Edin. 1711. Folio.

Description of the Isles of Orkney and Zetland ; Edin. 1711. Folio.

In 1739, Hamilton and Balfour reprinted several of these under the title of

A Collection of several Treatises, in folio, concerning Scotland, as it was of old, and also in later times.
By Sir Robert Sibbald, M.D.







LE VAILLANT.

Engraved for the Naturalist's Library.

MEMOIR OF LE VAILLANT.

FRANCIS LE VAILLANT, a celebrated traveller and ornithologist, was born in the year 1753 at Paramaribo, the chief town in Dutch Guiana, where his father, a rich merchant and a native of Metz in France, held at that time the office of consul. The passion for foreign travel, which he evinced at a very early age, was imbibed, as he himself informs us, chiefly from the example of his father, who had visited many parts of the world in course of his commercial negotiations. His taste for fowling, which the extensive forests in that country enabled him to gratify, even when a boy, to the utmost limit of his wishes, was likewise acquired from his father.

When only ten years old, he was brought to Holland; soon afterwards, he was removed with the family to France; he then spent two years in Germany, and seven in Lorraine. During that period his principal amusement was bird-shooting, but it was not pursued as a mere recreation. It turned his attention to the study of ornithology, by

leading him to observe the character and habits of the feathered tribes. He likewise accustomed himself to stuff the various species which fell under his notice, until by degrees he became a proficient in that art.

In 1777 some accidental circumstance brought him to Paris, where he had an opportunity of inspecting the numerous cabinets of natural history in that city. Not satisfied with examining the inanimate forms of the many strange and beautiful birds he had seen in these collections, he conceived an irresistible desire of visiting, for the purpose of further observation, the countries where they were to be found in their native state.

Africa, which was then much less known to European science than it is now, appeared to him to be that quarter of the world best calculated to increase his stock of new information, as well as to rectify old errors, in that peculiar department which was the great object of his journey. France and England were then at war; but this did not in the slightest degree damp the enthusiasm of M. Le Vailant; he embarked at the Texel on the 19th December 1780, and arrived at the Cape of Good Hope on the 29th of March 1781. In order to collect as much new information as possible, he proceeded in one of the Dutch Company's vessels, which were then taking their departure from Saldanha Bay; and it was while he sailed on board this ship that the fleet was attacked by an English squadron. Unfortunately the vessel which carried the whole

of his effects and travelling materials was blown into the air ; leaving him entirely destitute in that distant country, beset with native savages on the one hand, and a hostile armament on the other. " My only resource (says he) was in my fowling-piece, with only ten ducats in my purse, and the light dress which I wore."

In this perplexing dilemma, without knowing whither to betake himself, or what steps to adopt, he had the good luck to meet with an unexpected friend in Colonel Slaber, who received him as his guest, and treated him with the kindest hospitality. M. Von Boers, secretary for the colony, likewise took a warm interest in his fate, and became a valuable benefactor.

After having spent nearly three months at the Cape, or in the neighbouring districts, adding occasional specimens to his ornithological stock, M. Le Vaillant determined to prosecute his journey farther to the eastward. In general he did not penetrate far into the interior, but kept along the coast ; he made an excursion, however, into Caffraria as far as the 30th degree of longitude, and almost the 29th of latitude. His reception by the native tribes was friendly ; but as hostilities were then declared between them and the colonists, his progress was interrupted, and he was obliged to return by a more northern route across the mountainous regions of Sneeuwe and Cambedon to the Cape, which he reached in safety after an absence of about sixteen months.

This first excursion, however, did not altogether satisfy his curiosity ; he undertook several others even into more distant regions, and at length formed the project of traversing the whole African continent.

On the 15th of June 1783, he set out from the Cape and directed his course towards the north. This second journey was much more troublesome and fatiguing than the first. The greater part of his equipage, which consisted of oxen, perished in consequence of the excessive aridity of the country through which he passed ; another part of his train he was compelled to abandon on the left or south bank of the Orange river. In these discouraging circumstances, and with only a small retinue of Hottentots, who had faithfully accompanied him since his outset, he prosecuted his enterprise, advancing into regions then wholly unknown to Europeans, and taking as his guides those successive hordes of savages through whose territories he wandered, and whose friendship he had the good fortune to propitiate by the frankness and affability of his manners.

But the farther he proceeded, the more did he become convinced that his original design was impracticable. At length he arrived among the Housuanas or Bushmen, who subsisted by plunder, and whose very name spread terror among all the adjacent tribes. Happily for our traveller he succeeded in conciliating their good will ; and judging from their hardy and daring character, he conceived the

idea that with their assistance he might be able to accomplish the bold enterprise which he had so long meditated. But this illusion he soon found himself obliged to renounce ; and after having prosecuted his ornithological researches among them as far west as the 14th degree, and north to the tropic of Cancer, he resumed his journey towards the Cape, which he reached, not without escaping innumerable perils, within sixteen months after his departure.

His health having suffered from fatigue and the effects of the climate, he determined on returning to Europe. Accordingly, on the 14th of July 1784, he embarked for Holland, and in a few months landed at Flushing. In January, the following year, he repaired to Paris, where his time and attention were entirely engrossed in arranging the materials and ornithological observations he had collected in his travels, and in preparing his journals for publication.

At that unfortunate period the French capital was the bloody scene of those revolutionary storms which were then preparing to spread devastation and ruin over the Continental kingdoms. Obscure and peaceful as were the occupations of Mons. Le Vaillant, he did not escape the calamities of that terrible era. The jealous rivalry and hatred of contending factions fixed upon him as an object of suspicion. He was thrown into prison in the year 1793, and must inevitably have added another to the thousand victims of the guillotine, had not the overthrow of the notorious Robespierre paved the

way for his liberation. To the downfall of that sanguinary tyrant he owed the preservation of his life.

Quitting these wretched scenes of turbulence and assassination, he retired to a small property which he possessed at La Nouè, near Sezanne, and which became his favourite residence during the remainder of his life. In this agreeable retirement, his time was divided between the composition of his works and the gratification of his inextinguishable passion for bird-shooting, which led him to make frequent excursions into the fields and woods in his vicinity. Here he spent the last thirty years of his life, seldom leaving his retreat unless when occasionally obliged to visit Paris for the purpose of superintending the printing of his works. He died on the 22d of November 1824, at the age of seventy-one.

M. Le Vaillant wrote a considerable number of volumes, the greater part of which were devoted to the illustration of his favourite department of Natural History. The first work which he published was entitled "Travels in the Interior of Africa, from the Cape of Good Hope." It appeared in 1790 at Paris, in 1 vol. 4to., or 2 vols. 8vo., with engravings. His next publication was "A Second Journey into the Interior of Africa, by the Cape of Good Hope, in 1783-84-85," which also appeared at Paris in 1796, in 2 vols. 4to., embellished with maps and figures.

As has often happened with travellers and navigators, who are generally better qualified to make

discoveries than to write books, M. Le Vaillant was under the necessity of employing the pen of an amanuensis, M. Casimir Varon, to revise and amend the style of this second publication. Varon was himself a traveller and a poet; and it was very currently believed at the time that he had performed the task of editing M. Le Vaillant's Second Journey. This, however, is a mistake, and the error has been satisfactorily explained. Being a foreigner by birth, and having spent the years of his boyhood among the forests of Guiana, Mons. Le Vaillant never had a very pure or classical acquaintance with the French tongue. The early age at which he visited Africa, and his long separation from all European intercourse, tended still more to obliterate his recollections of the language, which in fact he had nearly altogether forgotten. And although he afterwards recovered his knowledge of it, so far as to speak it with facility, yet it was hardly to be expected from one in his circumstances that he could write it with elegance or correctness. It was to remedy these defects alone that he engaged the pen of a stranger to revise his manuscripts, and take charge of them while passing through the press. There is nothing in this substitution of the preliminary aid of a friend that can be deemed discreditable to the memory of either party; and it was to this extent and no more that the services of M. Varon were rendered. The incorrectness of style here adverted to is perceptible in the other works on Natural History

published by M. Le Vaillant, as well as in the letters which he wrote to his friends.

These deficiencies, however, are but trifles, and cannot in a scientific point of view derogate from the merits of the author. His travels are written in a spirited and agreeable manner ; they are rather meagre of events, because his wanderings were chiefly across deserts and mountains, which do not in general afford a very rich harvest for detail ; nevertheless, he has contrived to incorporate with his narratives a variety of most interesting particulars. His minuteness is sometimes more amusing than important ; but what he relates of his monkey, Kees, stands in no need of the apology which he has thought it necessary to record on the subject.

Some writers have reproached our traveller with vanity, especially with regard to his shooting exploits, which he is accused of introducing too often upon the scene, and to the results of which he is alleged to attach too much consequence. These little peculiarities, however, as well as his occasional indications of self-importance and professional enthusiasm, may be accounted pardonable infirmities in a man who had made so many personal sacrifices to enlarge the bounds of Natural Science, by bringing home several rare specimens from the unexplored deserts of Africa. The same excuse may be urged in vindication of the whimsical compliments which he pays to savage life at the expense of civilized society. His views, however, of men and

manners are liberal, generous, and humane ; and he never fails to speak with gratitude of the services he received, or the simple attentions he experienced, even in the kraals of the Hottentots.

Certain travellers, among others Barrow and Lichtenstein, who visited the same regions at a subsequent period, have called in question some of his statements, especially as having mentioned the names of tribes that are no longer found to exist. But it is quite clear that both parties may be correct. A few years would be sufficient to work a considerable change in the state of society in a country inhabited by hordes of wandering savages ; and it is neither impossible nor improbable that between the year 1782, of which M. Le Vaillant speaks, and 1797, the period referred to by Mr. Barrow, some of these migratory tribes might have been dispersed, and their very names entirely forgotten.

In other respects, his relations as to the fierce and implacable hatred between the colonists and the natives, are corroborated by future travellers. The Rev. John Campbell of Kingsland Chapel, near London, who twice visited South Africa as a missionary, mentions that he saw, near the Raven mountains, a female who recollects perfectly of M. Le Vaillant having sojourned in her house. Campbell says, indeed, that our traveller sometimes mixes too much of the romantic in his narratives ; but he admits that he has described with great accuracy the manners and habits of the Hottentots. Mon-

sieur Le Vaillant was the first that made the giraffe known in France, the descriptions of which before his time were very imperfect. The one which belonged to the collection of the king was brought by him from Africa. To him also his countrymen were indebted for the discovery of a great number of mammiferous animals, insects, and particularly new species of birds. He was likewise the first European writer that took notice of that singular protuberance or deformity, *a tergo*, peculiar to some of the African hordes, of which a specimen was afterwards exhibited in Europe in the celebrated Hottentot Venus.

The personal appearance and characteristic habits of some of these tribes are very graphically described by our author. Speaking of the Hottentots, he says, “ A physiognomist or modern wit would assign to the Hottentot, in the scale of being, a place between a man and the ouran-outang. I cannot, however, consent to this systematic arrangement; the qualities which I esteem in him will never suffer him to be so far degraded; and I have found his figure sufficiently beautiful, because I have experienced the goodness of his heart. It must indeed be allowed that there is in his features something peculiar, which in a certain degree separates him from the generality of mankind. His cheek-bones are exceedingly prominent, so that his face being very broad in that part, and the jaw-bones extremely narrow, his visage continues still decreasing, even to the point of the chin. This configuration gives

him an air of lankness, which makes his head appear very much disproportioned, and too small for his full and plump body. His flat nose rises scarcely half an inch at its greatest elevation, and his nostrils, which are excessively wide, often rise higher than the ridge of his nose. His mouth is large and furnished with small teeth, well enamelled, and perfectly white. His eyes, beautiful and open, incline a little towards the nose like those of the Chinese; and to the sight and touch, his hair has the resemblance of wool; it is very short, curls naturally, and is black as ebony."

Their general character M. Le Vaillant delineates in favourable colours. After mentioning their natural timidity, their phlegmatic reserve, and profound indifference to the affairs of life, he says, "they are the best, the kindest, and most hospitable of men. Whoever travels among them may be assured of finding food and lodging; and though they will receive presents, they never ask for any thing. If the traveller has a long journey to accomplish, and if they learn that there are any hopes of his soon meeting with other hordes, the tribe which he is about to quit will supply him with provisions as far as their circumstances allow, and with any thing else necessary for continuing his journey until he reach the place of his destination."

The wild Hottentots, he says, are remarkably fond of hunting, and in this exercise they display great dexterity. Besides gins and snares, which they place at convenient spots to catch large ani-

mals, they lie in wait for them also, attack them as soon as they appear, and kill them with their poisoned arrows, or with their assagays, a kind of long lance, which is generally a feeble and not very dangerous weapon in their hands. They pay little attention to agriculture, and are more addicted to pasturage and the rearing of sheep and oxen.

Another tribe of Southern Africa mentioned by M. Le Vaillant are the Gonaquas, which he thinks are of a mixed breed between the Cafirs and the ordinary Hottentots. Their dress resembles that of the latter; but as they are taller, they make their mantles of the skins of calves instead of sheep. Several of them wear, hanging from their necks, a piece of ivory or very white sheep-bone, and this contrast of hue produces a good effect and is very becoming. When the weather is hot, the men lay aside every part of their dress that is superfluous, and retain only what they term their jackals, which is a small girdle made of the skin of the animal so called, tied round their middle. The women are fonder of dress than the men, and employ greater care in adorning their persons. They wear a kross or mantle like the latter, but the apron which conceals their sex is larger than that of the Hottentots. Girls below the age of nine go entirely naked.

The two hues for which they show the greatest fondness are red and black. The former is composed of a kind of ochrey earth, which they mix and dilute with grease; it has a strong resemblance to brick-dust, or tiles reduced to powder. Their

black is nothing but soot, or the charcoal of tender wood. Some women are content with painting the prominence of their cheeks, but in general they daub over the whole body in compartments, varied with some degree of symmetry; and this part of their toilette requires no small length of time to complete. These decorative materials are always perfumed with the powder of the *boughou*, which is not very agreeable to the smell of a European; but it has the advantage over our rouge and pastes, of not being pernicious to the skin or injuring the lungs; and the female Hottentot, who is unacquainted with amber, musk, or benzoin, never knows what it is to be oppressed with vapours, spasms, or headache. The men never paint their faces; but they use a preparation made of both colours mixed, to paint the upper lip as far as the nostrils. Young girls sometimes favour their lovers so far as to apply this paint for them under the nose: and on this point they display a kind of coquetry which has a powerful influence over the heart of the enamoured swain.

Of the Cafirs M. Le Vaillant remarks, that they are taller than the Hottentots of the colonies, or even than the Gonaquas, although they greatly resemble the latter; but are more robust, and possess a greater degree of pride and courage. Their faces are more agreeable, with sparkling and expressive eyes. They are much tatooed, but do not disfigure themselves by daubing their eyebrows; so that if we set aside our prejudice with regard to

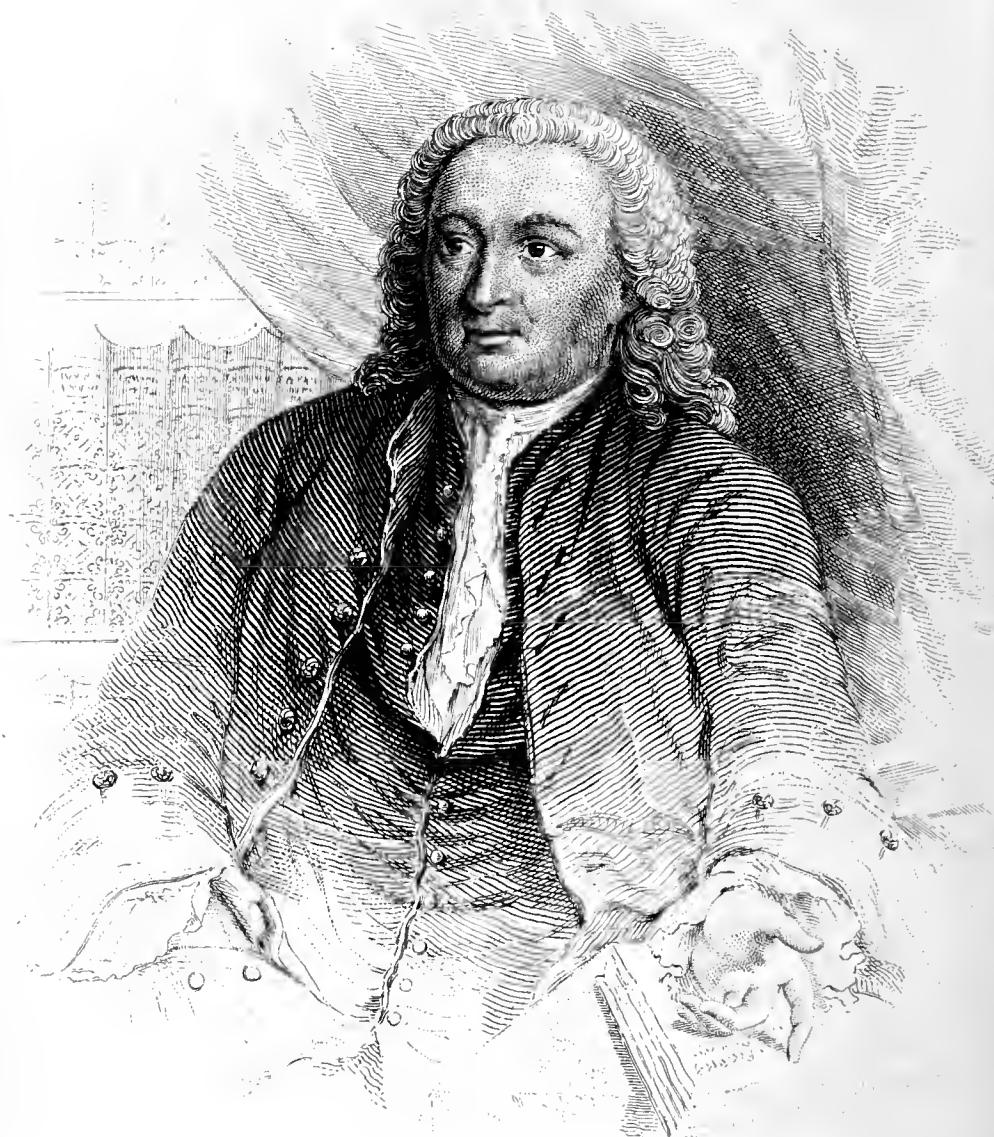
colour, there are many women among them who might be thought handsome by the side of a European lady. They wear cloaks or krosses made of the skins of calves or oxen, which reach to the feet. For ornaments and finery they care very little, not even wearing copper bracelets; their aprons, like those of the Gonaquas, are bordered with small rows of beads—the only vanity which they exhibit. Wives, instead of bringing dowries to their husbands, are usually purchased with cattle. When the bargain is adjusted, the chief of the tribe publicly gives the nuptial exhortation, by desiring the bride to be a dutiful and industrious helpmate, and recommending the bridegroom to labour zealously for the support of his family, not forgetting to remind him to pay his taxes, and provide an occasional entertainment for his chief.

The Travels of M. Le Vaillant have been translated into most of the European languages. Of his scientific works, we may mention his “Natural History of the Birds of Africa,” which was published in Paris in 6 vols. 4to. between the years 1796 and 1812. His “Natural History of Parroquets” was published in 1801–5 in 2 vols. 4to., and his “Natural History of the Birds of Paradise” appeared at the same time, also in quarto. He produced one or two other works on his favourite subject of ornithology, which are not so well known to the English public as the preceding. His drawings are distinguished for their fidelity to nature, as he had seen in their native habitats almost every bird which he

describes. They were executed under his own eye by an eminent artist, M. Barraland. His observations on the character and habits of the various species of which he treats, are often extremely curious, and always interesting. He was an enemy to systems, although he recognised the existence of distinct families as clearly defined by nature. Although that branch of science has made great advances since his time, it cannot be denied that he made important contributions to it; and his works still maintain a high rank, in the esteem of our best Naturalists, in that peculiar department to which his life and labours were most assiduously devoted.







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HALLER.

MEMOIR
OF
BARON HALLER.

ALBERT VON HALLER, the subject of this Memoir, was born at Berne on the 16th of October, 1708. He was the son of Nicolas Haller, an Advocate of considerable eminence in his profession. His father had a numerous family, and Albert was the youngest of four sons. Though exceedingly delicate in infancy, yet, from his earliest years, he exhibited the greatest capacity for almost every species of literature. His education, as well as that of his brothers, was entrusted to the care of a preceptor named Baillodz, and such was the severity of discipline exercised by this individual, that the accidental sight of him, at any future period of life, never failed to excite in Haller great uneasiness, and to renew the terrors of his youth.

The early display of his talents was most extraordinary, and almost incredible; for no sooner was he taught to write, than he began to arrange in alphabetic order all the words he learned in different

languages, subjoining a short explanation ; so that he very early composed a kind of lexicon or vocabulary in Greek, Hebrew, and Chaldaic, to which he had frequent recourse in the subsequent periods of his life. When ten years of age, he wrote verses in German and Latin, with a point which astonished his masters ; and with this weapon he revenged himself for the severity of his tutor, by describing in Latin satires what was most ridiculous in his pedantry. At the age of twelve, he had extracted from the Dictionaries of Moreri and Bayle, literary notices of two thousand of the most distinguished characters there described, thus affording striking proof of his assiduity and industry. In his thirteenth year he lost his father, and was then sent to the public grammar school of his native city. Here he speedily distinguished himself among his fellows, of which the following has been narrated as one proof :—Soon after his attendance commenced, a translation into Latin was prescribed to him, which he not only speedily and ably executed, but also with equal success rendered it into pure and elegant Greek.

On leaving school, he devoted a large share of his attention to the cultivation of poetry ; and his early essays in verse being published in the German language, immediately attracted the attention and admiration of the whole empire. His inclination to satire was strong, and his success might have tempted him to indulge his propensity, but an accident about this time occurred, which afforded him

an opportunity of exercising his self-control, and manifesting his good sense and feeling. The house in which he resided having taken fire, he had scarcely time to make his escape, snatching along with him a few of those articles he esteemed the most precious. Among these were his poetical effusions; which taking occasion to examine, and finding that many of them were devoted to bitter criticism and sarcasm, he determined to commit them to the flames, and had the decision to execute his purpose. He reserved only such poems as have transmitted his character with credit to posterity.

It was now time that Haller should make choice of a profession; but he found the more difficulty in this, as his extensive acquirements, and the versatility of his powers, fitted him nearly alike for any. He had, however, some natural bias towards medicine, and a professional and respected friend having encouraged and cherished this predilection, he, at length, in 1723, came to the decision to resort to Tubingen for the prosecution of his studies. Here he was initiated into the first elements of the art by Camerarius and Duvernoi, then celebrated teachers in that city; directing, at the same time, a considerable share of his attention to comparative anatomy.

During his stay at Tubingen, Haller took part in an adventure, which, though trifling in itself, yet as having established an epoch in his life, merits notice in this place. He formed one of a somewhat numerous meeting of his young associates, where, after the bottle had circulated somewhat too

freely, the parties tumultuously threw themselves into some scenes of pleasure which were very contrary to his tastes. At first, he himself took an active part in the sport, but being soon checked by an internal monitor, he continued only an unwilling spectator. He perceived with shame and grief, both in himself and his friends, that his senses were reeling, and his reason well nigh extinguished ; and subsequent reflection only adding to his pain, he from that time resolved never again to taste wine, to which resolution he scrupulously adhered till his dying day.

His master, Duvernoi, making use of the Institutes of Boerhaave in his prelections, Haller was influenced by a vehement desire to profit by the instructions of this celebrated man ; and he determined therefore to visit Leyden, that he might derive benefit from a master whose works had greatly astonished him, and whose reputation was second to none who had appeared since the revival of science.

Whilst Boerhaave taught medicine and botany at Leyden, Albinus was his associate in the school of anatomy ; and both of these illustrious men conferred conspicuous marks of their favour on Haller, which excited in his breast the most earnest solicitude to merit their approbation. But there was another individual, a contemporary of these eminent men, whose influence was, if possible, greater than that of either of them. This was the celebrated Ruysch, who at this time used constantly to frequent his museum, working amidst the innumerable objects

of organic life which his skill so admirably preserved, conferring on them all the semblance and freshness of life, without its inherent tendency to decay ; whilst he himself, now a nonagenarian, shrivelled with years, yet always active and laborious, more remarkable than any of them, seemed to add to his secret of preserving them, the still more wonderful art of in more ways than one, immortalizing and preserving himself.

Animated by such examples as these, Haller laboured night and day with indefatigable zeal ; so that he very soon deranged his health, which forced him for a time to quit his studies. On his return to Leyden, at the age of nineteen, he took his Doctor's degree, and speedily afterwards quitted Holland on a visit to England. Hans Sloane was now president of the Royal Society, and Douglas and Cheselden were amongst its most distinguished members. In London, it was the object of Haller rather to make the acquaintance of eminent men than to prosecute his studies ; and in this design he succeeded to his entire satisfaction. Before leaving England he paid a visit to Oxford ; and then passed over to France, where he became an inmate in the family of Ledran, and familiar with M. Geoffroy, the Jussius, J. L. Petit, and especially the celebrated Winslow, whose pupil he delighted to designate himself.

Being again threatened with ill health, Haller left Paris with the intention of visiting Italy ; but the fatigues of the journey proving too much for

him, he turned aside into Switzerland, and there passed some time in the society of the celebrated Bernouilli, Professor of Mathematics at Bâsle. Under his guidance he engaged in the study of geometry, and so entirely did he devote himself to this captivating study, that for a time medicine seemed almost forgotten, until some kind hints from his master again altered the current of his thoughts, and prompted him to return to his former and most favourite pursuit. The time which was thus spent in the exact sciences was far, however, from being mispent; and his acquaintance with them was ever afterwards useful to him, not only in the propounding of his own views, but more especially in pointing out those errors, which at that period were so prevalent from their abuse.

Haller returned to his native city in 1729, and though still a very young man, he now seriously engaged in the labours and pursuits attendant upon his arduous profession. After some years, he sought the situation of physician to one of the public hospitals. On his first application, another candidate was preferred; but very soon afterwards the situation was offered to his acceptance, and he most creditably discharged its duties till the year 1736. In 1734, the Republic of Berne established a school for anatomical demonstrations, and requested their accomplished countryman to superintend it. The same year, in a competition for the chair of Belles Lettres, he delivered a discourse on the superiority of the ancients over the moderns; and at the same

time published a learned work, in German, on the dangers connected with the imagination.

At this period of his life, viz. from 1732 to 1736, Haller found time afresh to devote a considerable share of his attention to poetry; and during it, he published anonymously a series of odes and epistles in German, which were at first attributed to Muralt, at that period very celebrated; and when, soon afterwards, the author became known, the general estimate was increased rather than diminished. These poems were speedily translated into many of the continental languages, and during his lifetime ran through upwards of twenty editions in various tongues. His poetry is distinguished by great sensibility, and by elevation and grandeur of thought: remarkably free from frivolous ornaments, it abounds in original touches of pathos and genius. Great variety of subjects became the burden of his song. He delighted to dwell on the beauties of the early dawn, which he was always solicitous to enjoy and improve; he expatiated on the charms of nature, the love of one's country, and the pangs of separation and banishment; he descanted on the true value of glory and renown; and, in a poem of three cantos, on a still deeper subject, the origin of good and evil. His most finished performance, however, is "*The Alps and its Inhabitants*," a noble theme, which received ample justice at his hands.

To his high poetical talents, Haller conjoined a very extensive acquaintance with history and biography. This he had an opportunity of demonstrating

in 1735 ; for being then appointed superintendent of the Public Library at Berne, he prepared a systematic catalogue of all the books in the collection ; and, moreover, examined and arranged more than five thousand ancient coins and medals, of which he drew up a chronological list and account. During the summers of this period, he used, by way of relaxation, to prosecute his botanical pursuits in expeditions amongst the mountains and valleys of Switzerland ; in the course of which, he at the same time applied himself assiduously to the cultivation of mineralogy and zoology.

In consequence of his ardent devotion to such objects, the reputation of Haller became widely extended ; and in 1736, the Regency of Hanover offered him the Chair of Botany, Anatomy, and Surgery, in the newly established school at Göttingen. No inducement was withheld, which could make the situation attractive and agreeable to him ; and large funds were placed at his disposal for the prosecution of those schemes which formed the favourite objects of his life. He therefore gladly availed himself of the offer, and for seventeen years devoted his utmost energies to promote the celebrity of the school, with what success is universally known. Poetry was now entirely laid aside, and the graver subjects of pursuit henceforward engrossed his zealous exertions. Through his influence, the university was speedily enriched with a botanic garden and an anatomical theatre.

His application to botany may be styled enthu-

siastic ; and his proximity to the Alps afforded him a wide and rich field over which to expatiate. Many were his excursions amidst their sublime scenery, which were not more agreeable than necessary to his health ; and for years he was employed in collecting a complete herbarium of the region. The fruit of his various excursions was published in two volumes folio, in 1742, under the title of *Enumeratio Stirpium Helveticarum*, and the work was adorned by a number of superb plates. In the preface of this work he gives a topographical description of the country ; and remarks that, within a narrow compass, the region comprehends the plants and insects of Norway and of Italy. To make his treatise the more complete, he prefixed an historical exposition of all that had been previously written concerning the plants of the Alps, from the days of Brunfelzius to his own. Being at this time the youthful cotemporary of the still youthful Linnæus, it could not be expected that he would follow that system which ere long obtained so wide a celebrity. Indeed, in 1736, when Linnæus was not thirty, Haller published at Göttingen a plan for the prosecution of botany, in which he recommended the natural order. In his work on the Botany of the Alps, he chiefly employed as characters, the presence or absence of the stamens, of the corolla, and of the buds ; the number of stamens when compared with the petals, and the number of the cotyledons, as well as that of the seeds, making fifteen classes in all. In the following year he pub-

lished an account of the plants, and the arrangement of the Botanic Garden at Göttingen, which work was at later periods republished and greatly augmented by the addition of new plants. In 1749 he collected his isolated observations on the genera and species of plants, and on their fructification; and published them in a volume entitled *Opuscula Botanica*.

An interesting anecdote has been preserved respecting an incident which occurred in one of his journeys in the Alps. He was on that occasion, as on many others, accompanied by his intimate friend Gesner. One day both being greatly fatigued by a laborious and protracted excursion, Gesner, overcome by fatigue, lay down and fell asleep on the snow, in the midst of an icy atmosphere. Haller, with the deepest distress, witnessed an occurrence, which, however, he in vain attempted to prevent, and which he apprehended might prove fatal. Goaded by the urgency of the occasion, he considered by what means the threatened danger might be averted, and speedily one method suggested itself to the warm sympathies of his heart. He stripped himself of his own garments and wrapped them round Gesner, and then with complacency set himself down, at no small risk, to contemplate a repose which he trusted would now be safe, as well as useful in recruiting his friend. The result fully realized his anticipations: Gesner in a short time awoke, not injured but refreshed, and they together in safety escaped the danger.

What most of all, perhaps, excites astonishment

on the examination of Haller's very numerous and successive labours, is the rapid changes which he made from one subject to another. Most profoundly versed in some of them, he seems on all occasions on the level with the most advanced cultivators in each department, and frequently surpasses them all. However much then he may be the object of our admiration, on account of his classical attainments, his poetical powers, or his botanical knowledge, we now remark that he became still more eminent for his physiological researches. It is upon these that his highest celebrity is based, and in this view, therefore, we are now chiefly to regard him. On the death of his master, Boerhaave, in 1738, Haller published his prelections, with much original matter, in six volumes, which appeared successively from 1739 to 1745. But his own discoveries and improvements soon tended to render this work obsolete ; and in 1747 appeared the first edition of his "*First Lines of Physiology*," a synopsis of his own system of that branch of science. This is a truly valuable production which, long after the death of the author, was used as a text-book in the schools, and has only lately been superseded. During the subsequent years of his life, he continued to augment and perfect this production, and published it in eight volumes, quarto, between the years 1757 and 1766, under the title of *Elements of Physiology*. Though referring chiefly to man, as usually exhibiting the utmost perfection of structure, yet it is by no means confined to him, and ranges widely over

the whole of comparative anatomy, and throughout the animal series down to the polypus. As comparative anatomy and physiology are two of the most interesting departments of zoology, Haller's claims to the attention of the naturalist are of a high order; and we shall stand excused for dwelling somewhat more in detail on this portion of his labours.

His work the "*Elementa*" astonished at the time, and still continues to astonish those learned men who peruse it, by the excellence of its arrangement—the precision of its style—the immense detail into which the author enters on the structure of the parts—the profound discussion of all the opinions previously delivered, as to their functions and uses—the exact and prodigiously numerous references to all those passages in authors, where allusion is made to the smallest matters connected with the science,—and the great improvement which it effected in physiology, by the substitution of induction for hypothesis. Any attempt to give the most curtailed account of this prodigious work, would within our limits be absurd, and we must therefore confine ourselves to a very few remarks.

It should not be forgotten that physiology was a very different science a hundred years ago from what it is at the present time, and that it was then much cumbered with scholastic learning and hypothetical disquisition, to the neglect of real observation and experimental inquiry. Haller was one of those who first and most powerfully contributed

to effect a revolution in the character of the science, by appealing in all possible cases to direct experiment. At the period we now refer to, the doctrines of the circulation of the *animal spirits*, effected through the agency of the *dura mater*, which transmitted its prolongations to the very extremities of the frame, and there constituted the seat of the faculty of sensation, were prevalent and almost uncontroverted dogmata, utterly at variance with the truth. Haller impugned and overturned these doctrines ; and thus merited the high commendation due to those who set aside false doctrine. Both Pacchioni and Baglivi maintained that the *dura mater* was muscular, and transmitted the vital fluid with a force not less than that which was exercised by the heart itself. Haller, on the contrary, demonstrated by experiment and otherwise, that the *dura mater* differs in no essential particular from the other cellular membranes of the body ; that it was in no degree muscular ; that it did not supply a sheath to the nerves, which, on the contrary, had their own proper coverings wholly distinct from the *dura mater* : he demonstrated that this membrane had no apparent sensibility whatever, and therefore, from this consideration alone, could not be the seat of sensation and motion. In his own words—" I inquired if the *dura mater* were irritable ; if it contracts, and so acts as a muscle. This enters essentially into Baglivi's system, and I plainly aver the contrary. In most animals the *dura mater* is closely attached to the bone, and if detached from it, it always is void

of motion. Comparative anatomy likewise informs us that this membrane is simply a true cover for the brain, for in some animals, as in the tortoise, it is found of a cartilaginous consistence."

There were other points of controversy in which Haller found himself early engaged. One of the most important of these regarded the respiration in man and the mammalia, and especially the instrumentality by which this vital function is effected. M. Hamberger, an eminent professor at Jena, had in 1727 published an account of the mechanism of respiration. According to his view, which was in unison with the prevailing and established notions, there was a permanent collection of air within the chest, between the ribs and lungs, as occurs in birds; and this air exerted an influence in compressing the lungs, which compression was, moreover, assisted by the action of the internal intercostal muscles. These opinions had, about the same time, been advocated also by M. Bayle of Toulouse. In reference to them, we shall allow Haller to speak for himself:—"The commentaries which in 1739 I commenced to give upon the Institutes of my illustrious master Boerhaave, led me to the subject of the mechanism of respiration, the thoracic air, and the use of the intercostal muscles. I could not agree with the views of M. Hamberger, with whom I was on terms of intimacy. Accordingly, I spoke of him with commendation, and endeavoured to treat him with politeness while commenting on his hypothesis; I cherished every feeling of delicacy

which truth would permit in combating his opinions. But M. Hamberger's sensitiveness was extreme. At Jena, he had established a little empire, and the applause of his numerous students made him regard my arguments as so many premeditated insults. He defended himself with asperity, and the more so, as Göttingen was enjoying a popularity which could not be shared by many of the German universities." This discussion led to a very keen and widely extended controversy, in which many of the eminent men of the day took a part. It led Haller, and his friends and pupils, into numerous and varied sets of observations, which have in a great measure formed the foundation of the opinions now universally received. We quote one passage on the point from his *Physiology* :—" Is air contained between the lungs and the thorax ? Is this air rarefied in inspiration, and afterwards becoming condensed, and compressing the lungs, does it cause expiration ? Is this opinion confirmed by the analogy of birds, of which it is strictly true ? Every thing concurs to confute this opinion : behind the pleura in man and quadrupeds, living and dead, the naked lungs are visible, without any intermediate space betwixt them ; and on perforating the pleura, the lungs retract towards the spine as soon as the air comes in contact with them. In birds, the lungs and their coverings being pervious, admit the air through large holes into the cavity of the thorax. But in these there is a manifest space betwixt the lungs and the pleura, which would be equally manifest in

quadrupeds, if the lungs were not contiguous with the pleura."

But the views of Haller, which were the most original, and led to the keenest controversy at the time, and the greatest admiration afterwards, were those which he propounded on the subject of *irritability*. The numerous family of polypi presented to him the appearance of a high degree of irritability, without any ascertained brain or nerves. Worms also, often in the highest degree contractile, having very minute nerves, appeared by their structure to lead to a somewhat similar inference. He moreover remarked, that those parts of the frame which move the most frequently and powerfully, such as the heart, are very moderately sensible, and do not receive a large proportionate supply of nerves: and very numerous experiments taught him that contractions, whether natural or excited by artificial stimuli, and sensibility, are very unequally distributed, and their proportions are very different in organized bodies. The following are the terms in which, at an after period, he gave a somewhat chronological account of his discovery, for such he clearly considered it.* "In my Commentaries upon Boerhaave's Institutions, published in 1739, I have expressed myself as follows:—*Wherefore the heart is moved by some unknown cause, which depends neither upon the brain nor the arteries, but lies concealed in*

* *Vis ab omni alià hactenus cognita proprietate corporum diversa et nova est: neque enim a pondere, neque ab attractione, neque ab elatere pendet.*—*Prim. Lin. Physiol.* § 408.

the very structure of the heart itself. The nature of the thing obliged me to differ in opinion from my preceptor. Three years afterwards I published the following doctrine, viz. *That all animal fibres when they were irritated contracted themselves; that this character distinguished them from those of vegetables, and that perpetual irritation alone was the cause of the continuance of motion in the vital organs, while the animal organs ceased to act.* In the abridgement of my Physiology I have positively ascribed the motion of the heart to the force of a *stimulus*; and in the second edition, I have been more explicit on the irritability of muscular fibre, asserting that it was independent of the nerves, and of every other known property. If any person denies the truth of this assertion, I shall be glad to learn from him upon what property this motion depends. Since that time, numerous experiments have convinced me of the truth of the doctrine above advanced."

We shall in this place introduce a very succinct account of Haller's separate treatise on this interesting point. He divides all the parts of animals into those which are susceptible of irritability and sensibility, and those which are not. He designates *irritable* those parts which become shorter upon the application of a stimulus, and *sensible*, those which on being touched transmit the impression to the sentient being; and, on the contrary, those are denominated *insensible* in which the most violent injuries occasion no pain or convulsive movement. These definitions are followed by a minute examination of the

sensibility of the several structures of the animal machine, and the degree of sensibility possessed by each. The skin is stated to be more sensible than any other; then the muscular fibre, both of which, however, derive this property from the nerves; and these being the source of the sensibility of the other parts, are themselves, of course, exceedingly sensible. Again the marrow, the bones, the internal viscera, &c. to which this property had been generally very freely conceded, were found to be wholly destitute of it. So that all the facts on this point are summed up in the following sentence:—"The sensible parts of the body are the nerves themselves, and those parts to which they are distributed in the greatest abundance. In fact, the nerves alone are sensible of themselves, and their whole sensibility resides in their medullary part, which is a production of the internal substance of the brain, to which the *pia-mater* furnishes a covering."

The author next proceeds to the subject of *irritability*, which he demonstrates to be so different from sensibility, that the most irritable parts are not at all sensible, and the most sensible are not irritable. He endeavours in detail to prove both of these propositions by facts, and then to demonstrate that irritability does not depend upon the nerves, but upon the inherent constitution of the parts in which it resides. After this, the whole variety of structures is in the same way examined as it respects their irritability, beginning with the nerves, which are proved to be not at all irritable; no more is the

skin, cellular membrane, fat, dura mater, &c. Some other structures again appear to possess the property, but only to a limited extent, such as the veins, arteries, and other vessels. This point, though at first sight apparently very simple, is not free from difficulties. Haller remarks, that the principal artery of the silk-worm performs the office of a heart; and that in many animals, after the heart is removed, the motion of the fluids is continued, for a time, apparently solely by the arteries. "Upon examining," he says, "with the microscope, the blood in a fish and a frog, after they were deprived of their heart, it continued to move for some time in the vessels; and I have seen it pass up and down the vessels of smaller fish, which had no motion either in their heart or gills, and which did not show the least sign of sensibility. But still this does altogether prove the point." Haller could never witness contraction in the aorta or other great vessels of any of the larger animals; in living frogs, too, he had frequently irritated the arteries with a variety of stimuli, and could never discover any contraction occasioned thereby: and concerning the circulation of animals generally, he states, that upon examination with the microscope, he could never perceive any contraction in the blood-vessels. "I have viewed for hours the circulation in fishes and frogs, and during the whole time, the sides of the vessel remained as quiescent as those of the tubes with which I examined them. If the beat of the artery had occasioned any motion in the neigh-

bouring vein, I could not have failed to have discovered it."

Next in order come those parts in which irritability is unequivocally marked, and in which it appears to be naturally inherent. These are especially the flesh of animals, the muscular fibre wherever it can be traced, whether in the external coverings or internal viscera. The different structures, indeed, appear to be irritable in proportion as they are muscular ; and hence we are not surprised to find that the heart, which is nothing more than a set of great hollow muscles, is especially endowed with this property ; and that this is most remarkably true in regard to cold-blooded animals. In the eel, motion is conspicuous in the heart several hours after it has been removed from the body ; in frogs, it is apparent from noon till almost midnight ; and in some other animals, it continues as long as twenty-four and thirty hours after death. Even after it has ceased to move spontaneously, its irritability again manifests itself on the application of a slight stimulus. On the whole, it appears that no part of the animal frame is irritable independent of the muscular fibre, and that the property is peculiar to this fibre ; this remark, however, must not be extended to the insect world, which appears to have the singular quality of being both irritable and sensible all over. This property, which Haller denominated the *vis insita*, is distinct from all other known properties of bodies. Elasticity most nearly resembles it, but differs as it is peculiar to hard bodies, whilst irrita-

bility is to soft. Some polypi, though very soft, are so irritable as to be affected even by the light. Irritability then, is a property of animal fibre, in the same way as attraction and gravity are properties of matter in general; and all that can be done is to explain the phenomena presented by this quality of fibre, without entering into useless speculative inquiries.

We may add, that to Haller we apparently owe the discovery that the iris is not muscular. His words are, “ You will be surprised to learn that the *iris* has no irritability, when the cause of irritation applied is mechanical. I have observed that its dilatation does not depend upon muscular force. After death it still remains dilated; and the phenomena presented in animals, whether cold-blooded or hot, harmonize with this view.”

Such, then, is a very short analysis of one of Haller’s treatises on this important subject; and instead of here expressing any opinion of our own concerning it, we shall subjoin a few sentences which embody the opinion of the celebrated Tissot, who took an early opportunity of introducing it to the notice of his countrymen in a French translation. “ The great discovery of the present day is *irritability*, described in the accompanying treatise; in praise of which I shall say nothing, seeing its celebrated author, for these twenty years past, has favoured the public with so many excellent performances, and now this subject is become the principal topic of all those who devote themselves to the important

study of the animal economy. Irritability is a property entirely different from all those which were known before in the body; and being essential to all animals, as perhaps likewise to all vegetables, it will henceforth be justly reckoned amongst the principal qualities of organized bodies. It must appear very surprising, and at the same time not a little mortifying to mankind, that a property which, as Zimmerman says, constitutes perhaps the very basis of life, should have escaped the eyes of all who imagined themselves to be observers, and some of whom were actually such. Perhaps it would not be impossible to assign the reason for this, but all that we shall say is, that it resembles other instances of a similar kind: attraction, and the weight and elasticity of the air, showed themselves to the senses every day, but it required a Toricelli and a Newton to illustrate them. As the whole animal economy revolves on this principle, it is easy to imagine what a change this discovery must produce. To England we owe philosophy, and to Switzerland physiology, the immovable basis of which is irritability."

Much praise is undoubtedly due to those, who, neglecting their own aggrandizement, endeavour to augment the popularity of others by introducing their works to notice, whether as translations from a foreign language, or by bestowing commendation and publicity on memoirs calculated to promote the progress of science, or in reviving discoveries which run a risk of being forgotten. This labour, less brilliant than useful, is one of those to which Haller

assiduously devoted himself; and it would not be easy to state all that in this way he accomplished. During his residence at Göttingen he published an edition of a work of Rupp's, which he greatly augmented, on the *Flora of Jena*; and shortly afterwards, that of a German work, in which was collected every thing which related to the history of the representation and engraving of plants, and respecting those artists who had devoted themselves to this kind of work. In 1750, he became the editor of a German translation of *Buffon's Natural History*, to which he prefixed an able dissertation, which was speedily translated into French; and also of a work of Formey's entitled the *Triumph of Evidence*; likewise of a "Collection of Voyages and Travels," the utility of which he demonstrated in a lengthened preface. The only other works we shall add to this list are the *Poems of Worlhof*, a *Dictionary of Natural History*, by Messrs. Valmont and Bomare; a *Comparison between the Temperature of Switzerland and Canada*; and finally, a Treatise of the Baron de Lind upon *The Veterinary Art*.

During the period of his stay at Göttingen, Haller often originated, and ever lent a ready and most sufficient help to such schemes as promised to subserve the interests of science, and to promote the public weal. Thus, in 1751, he procured a charter for the surgeons of the town, and on their incorporation was elected their first president. He did the same important service for the Royal Society of Science; drew up its original constitution, and was

named its president. He also greatly promoted the establishment of various public hospitals, and also of a public museum to which he largely contributed ; and finally, he established a school for artists, in which the study of delineating plants and animals might receive every facility. At the time, the purpose and plan of this institution were altogether new ; and the many which have since been established in almost every country upon the same model, have shown the usefulness of the scheme.

Labours so multiplied and important as these, were the sure means of insuring to Haller the highest possible celebrity. Almost every academy in Europe hastened to enrol his name among its members. In 1748 he was elected a member of the Royal Society at Stockholm ; and the king of Sweden conferred on him an unsolicited honour, by raising him to the rank of knight of the order of the Polar Star, the highest order in the kingdom, conferred only on such scientific men as Linnæus and Haller. In 1749 he was elected a fellow of the Royal Society of London, and in 1754 he became one of the foreign associates of the *Academie des Sciences* at Paris. In 1745 his own country likewise conferred an honour upon him with which he was highly gratified ; the republic of Berne appointed him a seat in its Supreme Council. George II. of England, ever manifested the liveliest interest in his welfare, and when at Göttingen, always loaded him with kindness. In 1739 he named him his first physician in the electorate of

Hanover, and also made him a Privy Counsellor : he also requested for him from the Emperor, letters of nobility, which were transmitted in the most flattering manner in 1749 ; but notwithstanding, Haller would never assume the title of Baron, though frequently and properly applied to him. Many of the most celebrated universities made the attempt of enticing him to become their associate, but in vain. The celebrated Dillenius was anxious to procure him as his successor in the botanical chair at Oxford. The year after, he was urgently solicited to establish himself at Utrecht as chancellor of its university ; and shortly afterwards, the king of Prussia, well known as the patron of letters and the friend of learned men, offered him, on the most liberal conditions, the presidency of the academy at Berlin. Marshal Keith wrote to him in the name of his sovereign, offering him the chancellorship of the university of Halle, and Count Orloff invited him to Russia, in the name of his mistress the empress, offering him a distinguished place at St. Petersburg ; but to all these solicitations he returned a negative reply.

There was only one country which Haller preferred to Hanover, and that was his native land. To it he returned in 1753, on perceiving that his strength was no longer equal to the discharge of the numerous avocations in which he was engaged. Besides, he had now great scientific projects in view, and the engagements connected with the three chairs he filled at Göttingen very much interfered with the

execution of them. His return to Berne spread the liveliest joy throughout the canton ; and a short time after, being, as we have seen, a member of the sovereign council, he obtained, by lot, the situation of Governor of the Mansion House ; so that on this occasion at least, the lot conspired with the wishes of the nation in recompensing a great man.

Any other man than Haller would now have sought retirement and coveted repose after such long continued and arduous labours. And, indeed, the abandonment of his professorship must have been a great relief ; but the Government of Berne, overjoyed at having recovered her illustrious citizen, for several years furnished him with a variety of occupations, and induced him to undertake some journeys which were both useful to his health and to the public. In 1753 and 1754, he traversed many of the cantons in search of salt-mines, which were much required, and afterwards he was sent to Kulm to examine some curious antiquities, of which an interesting account was subsequently given by M. Schmidt. The superintendence of the province of Roche was conferred upon him in 1758, and in 1762 he was appointed Governor of the canton of Aigle, to which he rendered important services. He drew up an account of the salt-mines of this district, and transmitted to the Royal Academy of Sciences, a memoir on the best mode of preparing salt by evaporation. He laboured hard to simplify its preparation, to increase its abundance and purity, and to reduce its price. He also drew up a code

of laws for the regulation of this republic ; and was often the commissioner of his own canton to those assemblies to which were remitted the general interests of the whole. He spent six years in the canton of Aigle, and there printed his great work on physiology.

But such employments as these could not long seduce the Baron from his literary occupations, and he speedily again applied himself to them with scarcely diminished energy. Within a few years of his return to Berne, he wrote an important work on Pathology, and also a treatise on Medical Electricity, on which we do not dwell. Removed, as he now was, from the botanical and anatomical theatre of Göttingen, we might be led to suppose that he would have renounced these two branches of study. But he found plants in the country, and plenty of the amphibiæ and fishes in the lakes, as he did quadrupeds in the fields, and he thus amply supplied himself with objects of investigation. He continued his botanical pursuits, and with the help of the microscope, made many additional observations on the circulation of the blood in animals, on the growth of their bones, upon the brain and eyes of birds and fishes, several of which were published between the years 1756 and 1765, and some of which appeared at the time in the *Memoirs of the Acad. Royal des Sciences*.

Even after Haller's health began to decline, and he was a good deal confined to the house, he still discovered objects which excited his liveliest curi-

osity, and which his extraordinary industry and ingenuity turned to account. It was under these circumstances that he began to direct a peculiar attention to the structure of the egg and the growth of the chick, and for three years bestowed upon this subject the most minute investigation which it has probably ever received. He made almost innumerable microscopic observations, and in a distinct work gave a detailed account of two hundred and eighty-four of them. This treatise was subsequently incorporated into his great work on physiology, and as the subject in question is at once so interesting and important, we shall only be rendering a most acceptable service to our readers, by presenting them even with a very abridged account of his conclusions.

Before, however, doing so, we shall give, in a tabular form, the dates of the most striking phenomena which are observed during incubation. After the egg has been subjected to the process of incubation for

7 hours,	the membrane of the yolk appears.
12 do.	the peculiar envelope (the amnios) of the chick appears.
24 do.	the envelope is perfect.
31 do.	the venous figure appears.
45 do.	this venous figure is completed.
48 do.	the heart appears, and begins to pulsate.
55 do.	first appearance of three cavities of the heart.
72 do.	end of three days, the wings and legs appear.
96 do.	four do. the two ventricles of the heart are seen; liver appears.
120 do.	five do. ventricles of the heart completed.
144 do.	six do. the bones appear.
240 do.	ten do. first appearance of the feathers.
451 do.	eighteen do. first cries of the chick.
528 do.	twenty-one do. chick liberated from the shell.

In the elements of physiology we find the following striking statement:—“The chick increases very quickly; its length on the twenty-second day is to its length on the first day, at least as 1,000,000 to 1; and the whole increase of the bulk of the bird during the remainder of its life, does not relatively exceed the fifth part of its increase in the egg during the first day.”

And now for his general conclusions.—I commence, says he, by remarking that the animal evidently undergoes changes solely by the evolution of its previously existing parts, without any addition of newly created ones. I at one time thought that I had found in the heart of the chick the proof of the creation of additional parts, and had persuaded myself that a curved tube had been converted into a muscle with four cavities, simply by the addition of new parts; but observation has shown me that the changes in this important organ are in truth only slight, and that they are effected in its primordial structure, by successive steps, which are the consequences of simple evolution.

In considering the different ways in which the animal which is to form can differ from the animal already formed, and how it can assume an appearance wholly different from what it had, I have found that the simple elongation of parts, which is naturally produced by the heart, may induce appearances which are altogether new. Such is the umbilical membrane. It is first seen as a soft pulp, then traces of net-work appear in this pulp, pro-

duced by the action of the heart: this net-work commences as it were by points; these points soon become threads, which ere long are coloured, and turn out to be arteries and veins, dividing at very small angles. These angles enlarge; whitish coloured spaces appear between the vessels, which, with time, dilate exactly like the spaces betwixt the fibres of leaves. In retracing the successive changes of this membrane, it would evidently appear that it had always existed, as also its vessels; that it had expanded upon itself; that the impulse of blood had prolonged the arteries, or divided its folds; that it had elongated the vessels from each other, and given to the membrane its length and breadth, its colourless spaces, and even its solidity. I regard this example as instructive, and calculated to exhibit the shades by which a soft and semi-fluid substance can pass into a state wholly different from its first condition, by simple evolution.

Regarding *solidity*, we have only to trace the successive increase of the lungs and other internal viscera, of the flesh, bones, &c. to perceive the steps by which a true fluid may become viscid, may then harden by insensible degrees, and this without the mixture of any new parts. All these portions of the young animal are produced from a fluid, apparently organized, they then become consistent, and gradually acquire well defined limits. We need not here dwell on the causes of these changes. We may simply remark, that a simple diminution of the fluid parts, the effect of the dilatation of the

vessel, is alone sufficient. Instead of water and other perfectly fluid elements, the enlarged vessels transmit particles which are viscid and albuminous, which mutually attract each other, and the nearer they approach the stronger they attract.

The manner in which the parts from being invisible become visible, is truly simple ; it is effected by enlargement, and still more by opacity. The lungs become visible only on the sixth day. When first perceived, they are sixteen-hundredth parts of an inch long ; they might have been visible when only four-hundredth parts long ; but they are not when eight-hundredth parts, solely because they were diaphenous, and of the same colour as the other parts. The liver is still larger on its first appearance ; and if it does not appear earlier, it is not owing to its small size, but to its want of opacity. It is the same with other parts ; so that we should be cautious in supposing that any portion of an animal is newly created, or that it had no previous existence : it may have been too small for observation, or may have been transparent.

The movement, and apparent repose of the parts of the body, depend also on the increase and opacity of the parts. The heart does not appear to have any movement previous to the lapse of forty-eight hours. Why, it may be inquired, does motion then appear ? and is it not true that the heart has previously propelled the fluids with vigour, since the growth of the chick has been so rapid ? If the heart has appeared in repose, it has been because it was

transparent. We see not the wind. Too small and feeble to produce any effect upon the surrounding fluid, the heart has appeared motionless, as it previously had appeared to be wanting. This consideration should anticipate the conclusion we are prone to draw, that an animal lives, or does not live, or that it begins to live at this or that moment which we choose to fix: we recognize life only by motion, and motion is apparent only by a certain size and opacity.

But whence this opacity, and by what shades do colours appear? There is but one step between mucous transparency and whiteness: a little more liquid confers transparency on white bodies, and a little less deprives them of it. Paper is white, and so is pounded glass, yet both become transparent when soaked in water or oil: remove these liquids, and they again become white. Even the fat of living animals is transparent; a slight dissipation of its fluid parts, and its cooling by air, make it white.

White then is the first colour of the animal, as transparency is its first condition. This is true of all the quadrupeds upon whom I have made experiments, and these have been very numerous; the same is true respecting birds. The colours are produced by the power of the heart dilating the vessels, and so allowing them to transmit the coloured particles, which, according to the principles pointed out by Newton, are always larger than diaphanous particles. In the chick we find occurring the yellow,

red, black, green, and blue, in the order just enumerated ; and all produced by the heart, somewhat assisted by external heat. It is by the heart, because fish in the frozen seas of the north manifest almost every colour, and because heat without the aid of the heart will not do it. The chick is much retarded and dies, if the egg continues white. Heat again helps somewhat, since it is true that the most brilliant and beautiful colours of quadrupeds, birds, fishes, shells, and even flowers, are usually found in warm climates. In vegetables it is heat alone which confers the colour ; at first they are white, and the sun effects all the subsequent changes.

Tastes and odours arise with the colours, or very shortly after them. The bile is green before it is bitter ; but the bitterness is soon afterwards perceptible, and the colouring particles are apparently the same with those which excite the taste and the smell.

Pass we now to the mechanism which produces the various forms of the different parts. The most simple, and at the same time the most efficacious instrument is unequal increase. An animal no longer resembles itself when some of its organs diminish and become extinct, whilst the others increase and are developed, or when some increase to a great extent, whilst the rest make only a slow progress. It is thus the chick changes in relation to the yolk. During the early period of incubation the chick is small ; the internal viscera are yet invisible, but an enormous appendage of these same

viscera is placed exterior to the body of the chick, and is connected only by a canal of communication. During the latter stages of incubation, and especially in the hatched chicken, things are quite altered. The internal viscera now have become large and visible, the canal of communication and the yolk have faded and disappeared, and the chick has nothing pertaining to it external to itself. Again, the dorsal aorta of the chick, before it is hatched, appears to be a common trunk with three branches, two of which belong to the pulmonary artery, and the third to the left ventricle of the heart; but after it is hatched, the aorta is only a simple artery, proceeding from the left ventricle, and having no connexion with the pulmonary vessels. Once more, the chick of the first day is scarcely more than a head with a slender thread, which is the spinal column; when twenty-two days old, the extremities and viscera have been elaborated out of this almost invisible appendage, and the head in its turn has become an appendix.

Relative change of place is another instrument employed by nature. Of this we see an example in the yolk and intestines. Both these are external to the chick, almost to the termination of incubation, and the embryo being appears to have two bodies communicating together, the one consisting of the head, extremities, and internal cavities, and the other of the yolk, the umbilical membrane, and the intestines, all parts of the chick, and yet detached from it. The membrane fades and disap-

pears, the yolk and intestines are included in the abdominal cavity by means of the acquired irritability of the muscles which cover that cavity, and this animal with a double body becomes a common chicken. So is it in another instance already noticed ; the heart becomes that well defined organ, instead of being a half ring, separated widely from the spine and placed almost without the chest. It is the cellular membrane, passing from the fluid state to a state of considerable solidity, which draws the separated portions of the heart towards each other, and approximates the whole to the back bone ; and similar causes mould the chick, and bind it upon itself, till it attains that perfection in which we find it.

“ I believe,” continues the author, “ enough has now been said to vindicate my opinion concerning the doctrine of gradual evolution. The probability appears to be, that all the essential parts of the chick exist throughout all time ; not indeed such as they appear in the adult animal, but so disposed that certain and provided causes hastening the increase of some of these parts, hindering that of others, changing their relative places, making manifest organs which were formerly transparent, and giving consistence to fluids, in the end form an animal very different from the embryo, but in which no part exists which had not essentially existed before. This is my explanation of development.”

These observations lead to reflections not less

important. It appears almost demonstrable that the embryo is found in the egg ; and that the mother contains in her egg-vessel all that is essential to the chick. For the yolk is a prolongation of the intestinal canal of the chick ; the internal membrane of the yolk is continuous with the internal membrane of that canal ; and this canal is continuous with the lining membrane of the stomach, mouth, and skin : the external membrane of the yolk again is the external membrane of the intestine expanded, and is continuous with the mesentery and peritoneum. The envelope which covers the yolk during the first days of incubation is a part of the skin of the chick ; and must always have covered it, though originally invisible, since the great size of the yolk, compared with the nascent chick, will not permit us to suppose that there could be found in the skin of this little being matter sufficient to supply an envelope, if this covering had not done it from all time. If the skin of the chick had been only proportionate to its own abdomen, it could never have covered the immense size of the yolk.

If the yolk be a continuation of the skin and intestine of the chick, the chick must always have existed in it ; but the yolk has always existed within the hen ; the chick then must have existed, though invisible, in its peculiar membrane the amnios, always apparently placed upon the yolk, though also invisible, on account of its minuteness and transparency.

“ The venous figure,” he concludes, “ and the struc-

ture of the yolk are exquisitely beautiful, though destined to endure but for twenty or rather ten days. What superabundance and prodigality of ornament for so momentary an existence! But time, all important to us, since it destroys us, is nothing to God, because he changes not. His creative wisdom alike adorns the grass which endures for a day, and the oak which lasts for ages. It would appear that God had thought fit that the world, as one theatre of his wisdom, should have as many parts in order and organization as the nature of things would admit, and that noise and confusion should have the least possible place. Upon the whole, it appears certain, that the beautiful structure of animals, however various, is always perfectly adapted to the proper and distinct habits, and functions, and manner of life of each ; calculated by rules more perfect than those of human geometry, and most evidently accommodated to foreseen purposes ; in the eye, the ear, the hand, and finally, every where, and can be ascribed to no cause less than the infinite wisdom of the Great Creator."

In 1773, Haller published, in the Memoirs of the Economical Society of Berne, an able treatise on the nature of the "Epizootie," that dreadful disease among horned cattle, which for several years destroyed so many hundreds of thousands in so many countries of Europe. He there demonstrated, that though with great care they had overcome its violence and checked its progress on the side of Switzerland,

yet the contagion was always afresh introduced from France, where no adequate means had hitherto been taken to arrest it; and he then exhibited the necessity of certain preventive methods, which soon afterwards being employed in concert by Hungary, Belgium, Switzerland, and France, were crowned with success.

By way of relaxation, and for his amusement, Haller, in 1772-4, committed to writing his thoughts upon the best form of the three different kinds of government. He published them as Romances in three volumes, which were severally entitled *Usong*, *Alfred*, and *Fabius and Cato*. The two former were immediately translated into French, and they all demonstrate the author's acquaintance at once with history and politics. If any one, misled by their popular appellation, were to expect only light reading and amusement, he would be surprised to discover in them deep views of the sagest administration, stern political truths, which were easily propounded under a slight disguise, and especially an elucidation of the omnipotence of morality and the laws. About this period he also contributed many articles to the supplement of *Le Dictionnaire Encyclopedique*; and, as would appear from a review of the German journals, published, chiefly at Göttingen, as many as fifteen hundred communications*.

Haller's next important literary labours were the

* In the "Conversations Lexicon," the number is stated at twelve thousand, which we should think is an evident mistake. We follow Vicq d'Azyr.

Bibliothecæ. Being in possession of an immense collection of the choicest books in various departments of science, which he could not continue to use much longer, he wished to gratify himself by going over them once more ; to render to these his favourite sciences a last service, and to learned men an additional favour, in pointing out to them those sources of information to which he had so successfully resorted. These great volumes are chronological catalogues of works of every age, country, and language, relative to the subjects on which they treat, with concise analyses and notices of peculiar and important facts and opinions ; and accordingly, they are very frequently consulted and quoted up to the present day. These libraries of professional knowledge, as they have been called, were published in the following order : *Bibliotheca Botanica* (1771, two vols. 4to) ; *Bibliotheca Anatomica* (1774, two vols. 4to) ; *Bibliotheca Chirurgica* (1774, two vols. 4to) ; *Bibliotheca Medicinæ Practicæ* (1776–1788, four vols. 4to, the last two volumes having appeared posthumously).

During Haller's declining years his health became most painfully infirm ; thus probably paying the frequent and severe penalty of hard study and literary labour and eminence. We have already stated he was very delicate in infancy, and this state continued throughout his youthful years. At the age of twenty-one, however, he became stouter, though liable to frequent and violent attacks of indisposition. When about sixty he became a martyr

to the gout, and this was soon followed by severe gravel complaints. But notwithstanding these most harassing ailments, the energy of his mind continued unabated, and in the midst of his pains he prosecuted his scientific pursuits. When much indisposed, he had the honour of being visited in his sick-chamber by the Emperor of Germany, who, in addition to this high compliment to his distinguished subject, was solicitous personally to express to him the deep interest he felt in his welfare and comfort: it was a visit alike of condescension and kindness. In a short time, Haller finding his strength become more and more exhausted, and perceiving he could not long survive his many troubles, solemnly inquired of his professional adviser and friend what he thought would be the term of his days, requiring at the same time a reply of sincerity and truth. Dr. Rosselet gave him a faithful and explicit answer, assigning a time but a few weeks distant. Haller with calmness expressed his obligation to his friend, and his gratitude for the speedy prospect, and continued to apply his time and powers to his literary occupations, and to pious offices, to which he had ever given a marked and devout attention. When the fatal moment approached, he was able to judge for himself; and putting his finger to his pulse, he remarked to Rosselet, "My pulse beats not." He thus himself indicated the moment when the vital spark was extinguished, and expired on the 12th December, 1777, in his seventieth year.

Baron Haller had been thrice married; first, in

1731, to Miss Marianne Wys, the daughter of the Seigneur of Mathod; of whom he was deprived in 1736, some months after his arrival in Göttingen. It is this lady who is so much celebrated in his poems under the names of Doris and Marianne. The love he felt for her was most ardent; and nothing can be more touching than his ode upon her death. In 1738 he again married, uniting himself to Miss E. Buiher, the daughter of M. Buiher, a counsellor of state and banneret of Berne, but she survived their union but a very short time. Finally, in 1741 he married Miss Teichmeyer, the daughter of a physician, who was privy counsellor and professor of medicine at Jena. He was also the father of a numerous family, leaving behind him eleven children and twenty grandchildren, to whom he consigned, with their patrimony, his fair name and good example.

Baron Haller was a Protestant, and very rigorously discharged the duties and obligations of his religion. He was decidedly pious, and like the great Robert Boyle, had a supreme veneration for the name of God. "A thousand incidents," says one of his panegyrists, "which passed unheeded by the vulgar eye, recalled to his mind the *Deity*: and when he recollects or heard that *Great Name*, he gave vent, in whatever company or circumstances he happened to be placed, to some pious ejaculation, with his eyes and hands uplifted towards heaven." He was also the champion of Protestantism, and published several treatises in its defence. That one

which is best known in Britain, is his *Letters to his Daughter on the Truth of the Christian Religion*. We can find room but for a very short quotation, which, however, will illustrate the simplicity and power of his style. “ Your father, who now addresses you, during the period of a long life, spent in continual labour and study, thought himself obliged to consecrate some of his leisure hours to inquiries on the subject of religion. The result of which has been, that those truths which have been called in question, always appeared to him the more evident and respectable, the more attentively he examined the reasons and proofs on which they were founded. Who are those sceptics and sneerers, who, in this our day so much abound ? I have read the works of their most famous authors. Not one of them was capable of understanding the true and precise acceptation of the terms made use of in the sacred writings ; not one of them had entered deep enough into the study of nature to trace Divinity in the various objects which surround us, notwithstanding those displays are so numerous and illustrious in every work of creation, whether we consider its design or disposition. Therefore, that which furnished Hobbes with a subject of infidelity, confirmed Newton in his faith ; that which was to Ofrey a matter of sport, was to Boerhaave an extensive theme for wonder and adoration.”

The Baron both spoke and wrote the German language with much elegance and purity. Dr

Hayne, the celebrated professor of eloquence at Göttingen, has stated that he did much to improve and simplify the language, and enriched it with many new and happy expressions. He was also master of French, English, Dutch, Italian, Danish, and Swedish, and communicated in all these languages with his foreign correspondents. These were numerous, as were his intimate acquaintances and friends, in which list may be enumerated the celebrated names of Worlhof, Bonnet, Gesner, and Tissot, Zimmermaun, Zin, Mecket, Hubert, and Sproegel. He was celebrated for the power of his memory, which scarcely allowed any thing which he had once heard or read to escape. On one occasion, being with Tissot in company with an officer who had served under the celebrated Charles XII. of Sweden, and who was giving a recital of his campaigns, thus fighting his battles o'er again, but who forgot the names of a great many places and positions, these were supplied so readily and accurately by Haller, that the old soldier could not be persuaded that the Baron had not visited and examined the country he seemed so well to know. We may add, that it was generally allowed at Berne, that no one was a sounder politician, or more intimately acquainted with the general politics of Europe, and still more with those of their own republic.

As the author of so many and great works, the habits of Haller could not fail to be most active, and his life much occupied and devoted to their

execution. The reading of new books, which were sent to him from every part of the world, was the only relaxation which he allowed himself. It is remarkable that he even slept in his library, and sometimes did not leave it for months: he always took his repasts in it; and when his family were there collected round him, to partake of their common meal, he had under his eye all that was dearest to him in this world. His individual tastes and manner of living were the most simple and frugal possible. He ate but little and drank only water: and we find that in his poem on the Alps, far from condoling with the inhabitants of these mountains because the vine did not flourish in their soil, he regarded the privation as a benefit and a blessing. The following anecdote may give us some idea of his devoted activity. A short while after his return to Berne from Göttingen, in ascending a stair, he fell and broke his right arm. It was set by an able surgeon; and Haller instantly set to work as much as possible to provide a substitute for it. Nor was he long in procuring one; for the next morning the surgeon found him surrounded with his books, and writing with wonderful facility with his left hand; it was with some difficulty the surgeon could obtain time for the necessary dressing, and Haller seemed to view the affair chiefly as rendering useless one of his ordinary instruments of labour.

His excessive devotedness to study exerted an influence not only on his own character, but also on every thing which surrounded him; his mansion

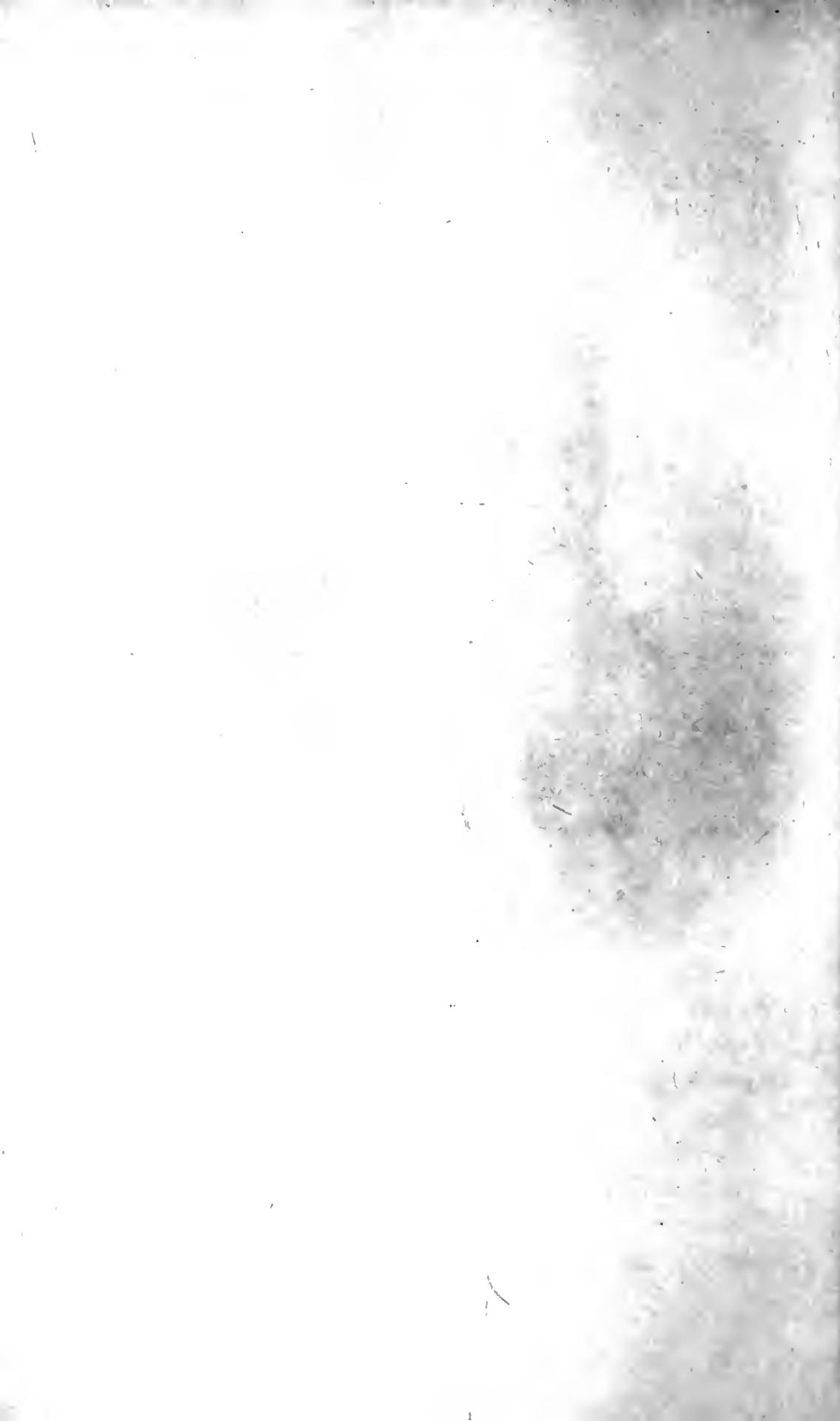
was a retreat for the sciences, and every thing within its walls was consecrated to their cultivation. His pupils, who, in great number, studied under his direction in his library and museum, his children, and even Madame Haller herself, who had learned to sketch and paint, that she might render herself useful to him, his friends, and even his fellow citizens made it their study to contribute to his labours. This impulse was communicated far and near ; he himself collected all, laboured for all, and animated all. Thus placed in the centre, every thing again reacted upon him. His imagination usually presented to him every thing in fair and bright colours, and his sensibility, which was extreme, did not permit him to view any thing with indifference. Though habitually serious and reflecting, still the vivacity of his genius and the variety of his information did not allow the exhibition of his character to be always the same. He was sometimes the subject of rapid alternations of pleasure and of pain. This inequality was frequently manifested even in society, into which, however, he but seldom entered ; his conversation, however, was at all times learned and pointed, and such was the constitution of his mind that he could always give even to minute objects the most acute and profound investigation. He had long been in the habit of making extracts of all that he read, which extracts were arranged according to their subjects, and he could thus readily use them when required. Those who laboured under him followed

the same plan ; and it was thus he acquired that almost incredible erudition of which his works are such striking proofs.

Upon the whole, the disposition of Haller was somewhat austere, and he long retained the impressions first made upon him, whether of favour or of injury. On some occasions he exhibited an arbitrary conduct, even towards his children, and frequently required considerable sacrifices at their hand. This trait became more conspicuous with his advancing years. Oppressed with infirmities, and also loaded with dignities and favours, not having the resource even of forming new desires, and abandoned solely to the passion of study, every thing which had no connexion with it had no charm for him. In fact, this in the long run very much altered his character, and no one could have discovered in him the affectionate friend of Gesner, and the fascinated and devoted admirer of his Marianne.

Haller was about the middle stature ; he had much life in his eye, much expression and nobleness in his physiognomy, and he united great mental strength with a prodigious and unceasing activity. In a word, he was gifted with powers of which few men in a generation or an age are possessed, and he used them with almost unexampled assiduity. He was perhaps both the most voluminous and learned writer since the time of Galen. It has been alleged that his writings are somewhat obscure ; but even his enigmas merit consideration.

What especially proves the clearness and solidity of his doctrine is, that throughout all his numerous productions, there reigns the greatest harmony and consistency; and every where may be found the same power of generalization, and the same unity of aim and execution.







ALDROVANDUS.

Engraved for the Naturalist's Library.

MEMOIR
OF
ULYSSES ALDROVANDI.

AT the close of that long and dreary period so well known under the characteristic appellation of the dark ages, it was to be presumed that the Science of *Natural History* would not be the last to ensure a cordial and efficient entertainment, in that happier and brighter era which then dawned upon our race. The high character of the great Stagyrite and of the elder Pliny, and their numerous and important writings, embellished with literary attractions of the highest order, all tended to enhance the inherent interest of that fascinating pursuit, which had been to these great men the grand object of their thoughts, of their adventurous travels, and of their chequered lives. When to the interest thus conferred upon the subject, we add the numerous and varied fields of investigation it embraced, and con-

sider how much it bears upon the daily business and pleasures of mankind, we cannot wonder that it soon attracted a band of warm admirers and zealous votaries, who excited the curiosity, and gratified the taste, of their own and succeeding times.

We have been struck with some rather remarkable points of similarity in the history of the more illustrious naturalists, who, in the 16th century, devoted themselves to the revival and prosecution of this delightful science. Five of these have been distinguished as pre-eminent, viz. Rondelet, Salviani, Belon, Gesner, and last, though not least, Aldrovandi. All of these distinguished men appeared at the earlier part of the century, and entered upon the stage of life within a very few years of each other; the first four, indeed, within a period of ten years. Again, these same four individuals bade adieu to this fleeting state of being within eight years of each other, and that in the vigour of matured life, ere any of them reached the age of threescore years. Nor can we regard it otherwise than singular, that the obscure and difficult department of Ichthyology should have taken the lead in the infancy of the science, and should have procured from nearly the whole of these naturalists a most marked and peculiar preference. This is especially true of the two earliest authors, Rondelet and Salviani, who treated solely of Fishes. Belon's first productions were on the same subject, though he subsequently distinguished himself in Botany and other departments. The remaining two took a wider range; though

his History of Fishes was the work which procured the patronage of the Emperor Ferdinand I. for the Swiss Zoologist. Aldrovandi's life presents a contrast to that of his eminent contemporaries, in the important point of its duration. Without perhaps superior abilities or opportunities, but with an energy and perseverance of application which knew no bounds, this venerable individual laboured most assiduously to the last, and thus acquired a celebrity which has been obtained by few. He was soon familiarly designated as the modern Pliny; by Haller he is characterised as the most skilful naturalist of his time; and by the learned Bayle he is described "as the most inquisitive man in the world with regard to Natural History."

But when an individual, however illustrious, is separated from us by the lapse of centuries, it is no matter of astonishment if the finer traits of his character, and many interesting incidents of his life, are found somewhat obscured in the distant horizon. This remark applies to the subject of our present memoir. Commencing his career more than three hundred years ago, we are scarcely to expect those full details which are so gratifying concerning our contemporaries and more immediate predecessors. After every allowance, however, has been made on this account, we must still express our disappointment that in turning to the most respectable sources of information, we find a meagreness of detail, and a degree of positive uncertainty, even respecting the most important particulars, in our Naturalist's life

which is wholly inexplicable ; while the brief notices we possess have been obtained by servilely copying from a very few original, and not very satisfactory, sources of information. It may be doubted whether, under any circumstances, it be now possible to recover much of that information which we desiderate. But with his own hand our Naturalist has reared his mightiest and most durable memorial ; and from the total want of satisfactory information in any other quarter, we have been driven to his own works, obscured with the dust of centuries, and thence have chiefly drawn materials for the following sketch.

ULYSSES ALDROVANDI was born in the ancient, and at that time very distinguished, city of Bologna. The year of his birth seems involved in some degree of uncertainty, which, except as bearing on the history of the last years of his existence, would be a matter of no great moment. Two dates are mentioned, viz. the years 1527 and 1522 ; and these have probably been fixed upon by calculating backwards from his supposed age at the time of his decease, which happened in the year 1605. According to the former, and now we believe the prevailing belief, he attained the age of seventy-eight ; according to the other, and as it appears to us more probable computation, he reached the age of eighty-three,—a good old age, and passed in circumstances of more than usual interest and excitement.* We

* According to Baron Cuvier (*Biog. Univ.*) and many others,

ought to add, that, according to Isaac Bullart, he died at the age of eighty.*

His extraction was noble ; being descended, according to his contemporary, Aubertus Miræus, from the illustrious family of the Counts of Aldrovandi.† In the dedication of one of his works to Pope Clement VIII. our author claims consanguinity with that respected ecclesiastic, and derives their common origin from the famous Lombard general, Hildebrand. His education seems to have been conducted partly in his native city, and partly at Padua. The correctness of some of his religious opinions having been suspected, he travelled to Rome in the year 1550, for the purpose of vindicating himself, which must have been effected without difficulty ; and then he availed himself of the opportunity of studying the antiquities of the place, and composed a treatise upon ancient statuary, which appears to have been his first production, and which was published in the work of his friend Lucio Mauro, on Roman Antiquities.‡ On this occasion he became acquainted with the celebrated Rondolet, already mentioned, and this distinguished Frenchman's researches into the History of Fishes may have had

ne was born in 1527. In Rees' Cyclopædia, again, a most respectable authority, the date given is 1522, and the age is stated at 83. On turning to the older authorities of Moreri and Bayle, we find no specification given by these authors, other than the date of his decease, and nothing is said of his age.

* Acad. des Sciences et des Arts, t. ii. p. 110.

† De Scriptoribus Sæculi, xvi. pars 2, p. 244.

‡ Rees' Cyclopæd.

some influence in increasing his own very decided predilections for the pursuits of Natural History. Upon his return home, he engaged in the study of Botany, and afterwards went to Pisa, to obtain the valuable assistance of Professor Ghini.

Having taken his degree in Physic at the university of Bologna in 1553, he was in the following year appointed to the Chairs of Philosophy and Logic, and also to the lectureship on Botany.* It is also stated, that he now became occupied with the laborious professional duties of the healing art; and Bullart affirms, that he likewise taught Physic within the walls of the university. Thus, then, we find Aldrovandi settled down at the age, according to our reckoning, of thirty-two, in the honourable character of medical practitioner in his native city, and also in the not less responsible and still more distinguished capacity of professor of several branches of science in its celebrated university.

But in addition to the chairs thus said to have been filled by him, not all at one time probably, but in succession, we have now to mention a fact which does not appear to be stated in any of the modern biographies, although established on the most satisfactory authority, viz., that, about the time under review, he was also elected Professor of Natural History. It may be true, indeed, that this situation was included in the first appointment he received, viz., the Chair of Philosophy; and this might the more

* Rees, u. s.

plausibly be urged, as it appears that, in the language of the time, Natural History was included under the more general title of Natural Philosophy. Instances of this use of the words will occur in these pages. But though this is a possible, we scarcely consider it a very probable explanation ; because there is good reason to believe that Natural Philosophy held a more general and earlier place in the curriculum of the different universities than did Natural History ; and also because, however natural a union or association Natural Philosophy might form with Logic, a study to which our Professor, as we shall find, was passionately attached, yet there is no such bond or connection between it and the pursuits of Zoology.

But be this as it may, we repeat, there is the most irrefragable evidence that Aldrovandi, at an early period of his life, occupied the Chair of Natural History. In the title of the first volume of his great work on this subject he designates himself by appellations of literary distinction somewhat different from those in present use, as Philosopher, and Physician of Bologna, and Professor of Natural History in its university. *Historiam Naturalem in Gymnasio Bononiensi Profetentis.* And did the fact, amid the silence of the moderns, require any additional confirmation, it would be found in the words of, so far as we know, his oldest biographer, and the only one, we have observed, who has noticed the circumstance. Miræus combines the statement of the fact with a compliment conceived

in somewhat singular terms. “ He filled the Chair of Natural History in the university of Bologna so successfully, that he appeared to bear away the palm of distinction not only from those who lived before him, but from those also who should succeed him”—*ut omnium ante se genitorum diligentissimus, etiam post futuris hujus palmæ gloriam præripuisse videatur.**

And we the less wonder at this elegant compliment, as our naturalist, in occupying this department of science, found himself in that situation which was most congenial to the earliest bent of his genius, and the enthusiastic prepossessions of his whole soul. This we can fortunately exhibit on his own testimony, and that of scarcely less competent witnesses. And if these his sentiments be produced somewhat at length in his own words, and in those of his intimate friends, we feel that no apology is required, as, beyond all question, these are the most authentic vouchers of the truly philosophic ardour of our distinguished Naturalist. We may remark in passing, that it seems highly probable that he soon vacated his chairs of Philosophy and Logic ; while those of Botany and Physic he probably retained.

Having occasion, at an advanced period of his life, to allude to the labours of his immediate predecessors in the prosecution of Natural History, Aldrovandi gives the following account of himself :

† Miræus, Loc. cit.

“ From my earliest childhood I esteemed nothing more than this noble study, nor do I believe there is any other subject, which can more favourably or clearly display the attributes of the Deity, exhibiting at once His Almighty Power, His excellent goodness, and His unsearchable wisdom. Wherefore, immediately after having tasted of the politer studies, and after devoting myself for seven successive years to the civil and canon law, I made such proficiency that I was urged to accept the badges of its highest honours. But having tasted the elements of philosophy—viz. those which are found in Logic—I was so much delighted with the study, that, contrary to the advice, and the opposition of my friends, I bade farewell to jurisprudence, and gave the preference to philosophy; with which philosophy, when I perceived it consisted in the particulars above enumerated, impelled by strong inclination, I was most eager to become familiar. I therefore directed my views to these pursuits, as to my earthly *summum bonum*. To it I devoted every word and every action, in fact, my whole labour; and was like the mariner directing his course by the polar star; not forgetting the precept of the Stoics, That every man should have some fixed goal unceasingly before him.”*

These sentences throw considerable light on the history of Aldrovandi’s early years. For it thus appears, though not a hint of the fact is to be found

* *Opera, t. i. Præfati.*

in the ordinary sources of information, that for a period of no less than seven years his mind was disciplined in the severer studies of the law; and that it was not till after he had distinguished himself by unusual proficiency in that department of learning, that the native bias of his mind at length prevailed over every consideration of interest, and impelled him to still nobler pursuits.

At a later period of his life we find our author giving utterance to the following sentiments:—"I had scarcely begun to taste the sweets of study, when I found that I must keep one sole object before my eye, according to the ancient Greek saying—*εδέν γλυκυτερον ο πάν ειδέναι*—*nothing is sweeter than to know all things*. Not, indeed, supposing that I could attain universal knowledge, for this is beyond human power, but feeling I must exert every nerve with the greatest ardour in the pursuit of learning. Laying aside, therefore, all other business and cares, I devoted myself entirely to study; not only in making myself acquainted with the best authors, but in making their sentiments my own. I accordingly spared no labour in making myself as great a proficient as possible in that study, among others, which treats of natural history: for this kind of knowledge leads not only to honour and renown, as do others, but is accompanied with the most exquisite gratification and astonishment. It is indeed true, that there is nothing more sublime, nothing more worthy of men of noble and ingenuous minds, than to investigate the secrets of Nature, and to endeavour to become

acquainted with those matters with which the Almighty alone seems to be familiar.”*

We shall gratify our readers with one more of these delightful extracts, which, while exhibiting our Naturalist’s general habits, bears more particularly upon the insect world. “ What my labours have been, and to what lengths I went, I could wish you to judge; and when I reflect on the many days I have given to this study, and what expenses I have incurred, I cannot but wonder how I have been able to obtain possession of, and to examine, and to describe, such a number of minute creatures. For the attainment of my object, I was in the habit of going into the country for months, during the summer and autumn, not for relaxation, like others; for at these times I employed all my influence, as well as money, to induce the country-people to bring me such insects, whether winged or creeping, as they could procure, in the fields or under ground, and in the rivers and ponds. When any was brought me, I made inquiries about its name, habits, locality, &c. I often, too, wandered through the vineyards and fields, over the marshes and mountains, accompanied by my draughtsman and amanuenses, he carrying his pencil, and they their note-books. The former took a drawing if expedient, the latter noted down to my dictation what occurred to me, and in this way we collected a vast variety of specimens.”†

* *Opera*, t. ii. *Dedicat.*

† *Opera*, t. iv. *Ad Lector.*

The expressions which occur in the above passages accord with the fact that the Science of Natural History, though naturally dividing itself into distinct fields of investigation, had not at the time now under review made such advances as to have procured votaries who confined their principal attention to some favourite department. Hence we find that the whole interminable field opened up to our professor's view, so vast that it would have daunted any other energies save his own. On his mind, however, the extent of the subject only produced the opposite effect; and he almost seems to have aimed at the endeavour of investigating and describing the whole range of Nature's works.

It is only reasonable to suppose that a man who appreciated so highly the favourite object of his studies, who prosecuted it with such unwonted ardour, and wrote with such burning enthusiasm, could not fail to impart something of the same temper to others, and would be especially calculated to become at once a most useful and popular public teacher. This matter, however, is not left to conjecture, as we have the direct testimony of Uterverus, the friend and immediate successor of Aldrovandi; whose words are these: "Every one is aware of the celebrity which Aldrovandi has acquired in his public prelections in illustration of Aristotle, Theophrastus, Dioscorides, and Galen, illustrations which have been heard with the highest delight by his auditory. Nor is less praise due on account of the demonstrations which he gives, both in the pub-

lic garden and in his private dwelling, concerning fossils, and animals, and plants, of which he has an admirable collection. He also correctly attaches the names, and describes the nature and properties of them all.”*

It has already been stated, that about the year 1553, and when we suppose Aldrovandi had attained the age of thirty-one, he was appointed to the Chair of Botany. Of this department of science, as of all the rest, he seems to have been a most assiduous cultivator. He had the honour and happiness of establishing the Botanical Garden of Bologna, in the year 1567. The accomplishment of this important enterprise at this early date must have exerted a powerful influence on the celebrity of the university and the progress of the science. It must have proved a useful stimulus at the time, and must have been permanently useful in disseminating a love of the science throughout Europe. We have no reason to suppose that our Philosopher ever abandoned this fascinating study. At all events, it is recorded by Haller that his *Hortus Siccus*, or collection of dried plants, which filled sixteen large folio volumes, was still in existence nearly a century after the collection was formed; and the result of some of his labours in this science was published at a later period in his “Dendrology,” a massy folio, to which our attention will in the sequel be more particularly directed.

* Utterverus, Recommend. in Opera, t. ii.

But the establishment of the Botanic Garden was not the only monument of his influence and zeal which Aldrovandi left behind him. We have already learnt, that, with a little corps of assistants, he was in the habit of making scientific excursions into the surrounding neighbourhood. On these occasions he collected innumerable specimens, and these he took every pains to preserve. This then was the *formation of a Museum*, to which object he devoted himself with all his wonted energy. It animated his personal studies, and illustrated his lectures; it extended his own views, and could not fail to infuse far and near a taste for these pursuits, and it ere long formed the ground-work of his voluminous “Opera.” On these points let us hear himself:— “Observing that many errors had crept into the works of the most distinguished writers, such as Pliny, Avicenna, &c., in order that I might gain information with regard both to the internal and external structure of the objects I was to describe, I laid out a large sum of money in various travels into the different parts of the world, undertaken chiefly in reference to birds and other departments of Natural History. Nor has less trouble been taken in describing them, in assigning them their peculiar colours, and in delineating them upon tablets made of the pear tree; afterwards in engraving them, (*exculpendisque*,) and finally in giving them to the public. For these purposes I retained the services of one celebrated painter for more than thirty years, at an annual salary of not less than two hundred golden

pieces, (crowns.) I also employed the most celebrated draughtsmen, (*delineatores*,) L. Bennini a Florentine, and C. Swint of Frankfort, who superintended my engravings; and at Florence, the Duke of Tuscany's famous painter, J. Ligoti, to delineate the birds in the most exquisite manner possible. Finally, I have wood-cutters, (*sculptores*,) and especially the illustrious C. Corialanus of Nuremberg, and his nephew, who carved them so beautifully, that they appeared not to be represented in wood, but in brass."*

In these words Aldrovandi speaks in very specific terms of his travels; and of these it would be interesting to have a more particular account, and to trace the impressions made upon his ardent mind by the novelties they brought under his view. We have already seen his native energy displayed during his short sojourn at Rome, which he signalized by his treatise on ancient statuary; and possibly a minute examination of his writings would exhibit other traces of his footsteps. Among the notices of his works, we find that in Jordanus, there is "a letter of our author, in which *he treats of Egyptian Buildings*:"† How he came to dilate on this subject we have been unable to discover, and the circumstance scarcely supplies ground for the conjecture that he visited the Country of the Pyramids, although his writings prove he was intimately

* *Opera*, t. i. *Præfatio*.
Bibl. Anat. ii. 747.

acquainted with its most recondite mythology. In this lack of circumstantial information, we turn in vain to his several biographies, which, although they speak generally of his travelling, yet do not supply a single particular as to the scenes and countries which he visited. Miræus, indeed, associates his devotedness to travel with his medical pursuits, and in this connection there was probably some truth. “ Attaching himself to that department of Physic which describes the articles procured from animals, in order that he might transmit to posterity the figures, characters, and dispositions of these animals, not content with the examination of the accounts of others, he travelled himself into the most distant countries that he might subject them to personal observation.”* Bullart’s account is somewhat more florid. “ Aldrovandi endeavoured to render his name famous, by exhibiting in his learned writings all the wonders which are represented on the theatre of the world. Animated by this generous motive, he took long voyages to observe the form, dispositions, and qualities of the animals and plants of every country. He likewise penetrated into the interior of the earth to discover the virtues of minerals; he carried his regards into the regions of the atmosphere, to watch the tribes which frequent it; he descended into the ocean and into rivers, in pursuit of their inhabitants; and, finally, re-ascended into the skies to examine

* Loc. cit.

the constitution of its luminaries and meteors, and their different agencies upon terrestrial objects ; in a word, he allowed nothing to escape him which might in any way elucidate external nature.”* And, lastly, in the more measured terms of Bayle, “ His cares, his labours, and his expenses, in Natural History were incredible. He travelled into the remotest countries without any other motive than that of enquiring into their natural productions : minerals, metals, plants, and animals, were all the objects of his regard.”†

Aldrovandi did not suffer any of his journeys, or the fruits of them, to be lost ; the whole of his collections, transmitted from every quarter, being most accurately examined, and deposited in his Museum. We have seen above, that the reason which he assigns for his travelling was, that he might be an eye-witness of the interesting phenomena of which he read ; and might gain information with regard both to the internal and external structure of the objects of Natural History which he encountered. Many investigations concerning that structure could not of course be accomplished during the hurry of a journey, and much, therefore, must have been reserved for more elaborate examination in the Museum. Nor did he work there alone. Like a man of powerful mind, he instigated others to their own improvement, and that of the science they

* Acad. des Scien. &c. Loc. cit.

† Dictionnaire, &c.

were cultivating. He had able assistants in the use of the pen and the pencil; and the dissecting knife, not less essential to the Naturalist, was actively employed by himself and others. The names of several of his associates in this department of his labours have been handed down to us, and must not here be omitted. The following list is given by the indefatigable Haller:—M. A. Ulmas, J. Buttnerus, J. B. Cortesius, J. C. Arantius, and Coiterus; and we find throughout our author's works due acknowledgments made of the labours of these several individuals, in connection with the more important preparations.

One remark we will here hazard; viz. that in this first of the earlier Naturalists, first in eminence, though not quite in time, we witness not the awkward novice of a barbarous age, but one who may well be regarded as a pattern and example to the most accomplished of modern Zoologists. For what man could do more? Whether we regard him in his study, or in the fields, in his Lecture-room, or his Museum, surrounded by his assistants, his amanuenses, and his draughtsmen, or in his travels over various and distant lands—in all we see the ardent, the indefatigable student of Nature, and one who could not fail to impart a most powerful impulse to science. In spite of that *amour propre* which leads so many men of every succeeding generation to imagine that they have far outstript their predecessors, we see here the master of most of them—the Hunter, the Humboldt, the Cuvier of

his day. Nor are these mere sounding words. Much confirmatory of what we advance remains to be noticed as we proceed, and the utmost we can say may be at once corroborated by a few additional statements. Our Naturalist finally bequeathed his vast store of scientific treasures to the Senate of Bologna, and by this distinguished body it was made the splendid foundation of the great public Museum of that city, where many of the preparations remain to this day. And not less to the point—the vast collection of paintings which Aldrovandi accumulated were thought worthy, so late as during the splendid but despotic rule of Napoleon, of being removed from the venerable halls they had for centuries graced, to Paris, where they were deposited in the Museum of the *Jardin des Plantes*. At the peace of 1814, right and justice resumed their sway; when these remarkable works would, we presume, be restored to their appropriate place, under the custody of the citizens of Bologna. To this we may add, that the prodigious mass of valuable manuscripts which our Naturalist left behind him were preserved, and are still to be seen, in the Public Library of his native city. Among these would probably be found his correspondence with the most illustrious men of his day; but we have not been able to detect a single trace of these most interesting memorials in any of the accounts of this distinguished man which have yet been given to the world.

In fact, we desiderate nothing more in the meagre

biographies of this individual, than those allusions to his private history, and those traits of the retirement of domestic and social life, without which no just estimate can be formed of the character of the man. That he was not a stranger to the bliss of friendship may well be presumed, and that he had many attached and warm admirers will presently appear ; but of this charm of life, this “ soft green in our thorny path,” we know not what share he found. In like manner, on his decease, he left a widow, who, we shall find, speaks highly of his virtues ; but how long she had been the companion of his weal and woe, and to what extent the participant of his thoughts and pursuits, we have not learnt. In short, we have scarcely been able to get a single peep into the retirement of his private life ; and the only thing like it is the following statement of Bullart, borrowed, we suspect, from words already quoted. “ On the return of the sweet days of summer, our Naturalist retired to enjoy the pleasures of the country, betaking himself to a residence he possessed in the neighbourhood of Bologna ; and here he collected his friends and associates about him, still, however, only to prosecute his favourite employment.”*

But we must hasten to notice what formed the great consummation to which were directed the whole energies of Aldrovandi’s soul, and the fondest wishes of his heart. All his drawings, and prepara-

* Loc. cit.

tions, and manuscripts, were only means to an end ; and formed in his view merely so many preparations to his grand work on Natural History. Part of this work appeared during his life, and part after his death. It was published in the most sumptuous style, and with a lavish expenditure. When this is added to his previous outlay, it may easily be understood how his private fortune and professional receipts must have been exhausted, and how, like some other zealous Naturalists, he involved himself in pecuniary difficulties, and in actual poverty. That his circumstances were extremely reduced is indisputable. But upon this fact has the statement been engrafted, not only that he ruined himself, but that at length, in the words of Bayle, “he reduced himself to the utmost necessity, and died a neglected pauper in the public hospital of Bologna, loaded with years and blind, a remarkable instance both of public ingratitude and private curiosity. A thousand reflections,” adds Bayle, “ might be made on this adventure, but these I leave to others.” —Nor have these reflections been wanting. The melancholy tale is now repeated in most of our popular accounts, and made the occasion of suitable lamentations over the hardships of deserving authors, and the ingratitude of a selfish public, which will readily enjoy the pleasure, and yet feel no commiseration for the over-zealous individual, who reduces himself to actual starvation for their gratification.

In one of the last notices of our Naturalist’s life

which has been published, we find allusion made to the point in the following terms, which, as it clearly expresses the prevailing opinion, we the more willingly quote. “Cuvier, in a notice of Aldrovandi’s life, regards this circumstance as doubtful; imagining it improbable that the Senate of Bologna, to whom he bequeathed his Museum and Manuscripts, and who laid out large sums after his death in completing the publication of his works, would have left him destitute during his life. This, however, is mere conjecture; and there is *too much reason to fear* that, like many other eminent men, he was abandoned to struggle with misfortune, and not advanced to honour and estimation, until after his career was finished, when they could be of no use to him.” We are glad for the sake of our hero, and of humanity, that our limited investigation induces us to believe, that Cuvier’s conjecture is better founded than the fear here so feelingly expressed.

We may first remark, that the doubt expressed concerning the truth of the popular belief, did not originate with Baron Cuvier in the nineteenth century, but was expressed by Baron Haller in the eighteenth; his words are explicit, “*Nostro ævo negatur.*”* “*It is now denied.*” But still there intervened between the times of the great Physiologist and our Naturalist the best part of two centuries. During the intermediate space, we have been unable to obtain any information either with regard to the

* Bib. Anat. t. ij.

origin of the doubt, or the history and prevalence of the opinion. In betaking ourselves to what we may call the original documents, we find both negative evidence against the modern account in a total silence on the subject ; and what we cannot but consider positive proof of its inaccuracy, in circumstances which appear to us quite incompatible with the melancholy representation. Bullart's biographical notice was published nearly a hundred years before the time of Haller, viz. in 1682. It is as full as any account we have seen ; and though alluding, in due proportion, to the circumstances of Aldrovandi's last days, it is perfectly silent as to the point under review. Miræus, again, takes us more than another century back ; for, in fact, he was a contemporary of Aldrovandi, being born in 1573 ; and in his short and interesting notice there is the same total absence of all allusion to the circumstance, which could scarcely have occurred had the fact been known or believed in his time.* His statement is so touching, that we quote it. “ But this man, distinguished by the highest sagacity, who has brought before our eyes the unknown forms of so many animals, seems almost to have been wronged by Nature, as a step-mother, in that in his old age he became blind ; and that he who was marked by

* Since writing the above, we find in the curious work of Paul Freherus of Nuremberg, *Theatrum Virorum Clarorum, &c.* 1688, an explicit notice of this report—“ Retulerunt quidam, quod propter copiosas librorum editiones, ad extremam pauperiem redactus in Xenodochio Bononiensi vitam finierit.” (Theatr. p. 1317.)

the perspicacity of his judgment, and who has so strongly illuminated the hidden causes of many things, should spend the last portion of his life—in darkness.”* If from these sources of information we turn to the works of Aldrovandi himself, we think there is unquestionable evidence that the representation must be fallacious. Having said this much, we shall postpone any further remarks on the subject till we have put the reader in a position to judge for himself, which will be effected by supplying that short account and history of his works which our limits will permit. Nothing, certainly, at all like a miserable end could have been anticipated from any thing we have hitherto met with in his history, and what still remains is not less incompatible with so melancholy an issue.

Though Aldrovandi’s taste for Natural History was early developed, as already stated upon his own authority, yet a variety of circumstances concurred in, for a time, preventing its regular cultivation. His early years were, of course, devoted to those branches of general education which befitted his honourable birth ; and thereafter a considerable time was devoted, as we have seen, to the study of Philosophy, Logic, and Law. These pursuits, however, being at length terminated, we find that he devoted himself to his favourite study with an energy which never perhaps has been exceeded. This sufficiently appears from the extracts already adduced.

* Bayle’s Dictionary, English Translation.

But let us proceed briefly to exhibit the plan which he early sketched, as the labour and pleasure of his life; and to which he seems to have stedfastly adhered. As already mentioned, his plan of study had relation to a grand and comprehensive publication, with which he was engaged for probably not less than fifty years, and which, though to a considerable extent accomplished by himself, was not finally completed until years after his decease.

In regard to some of these particulars let the author speak for himself. "Feeling that I have been endowed with the talent of investigating the deep secrets of Nature, and that a span of life had been given me sufficiently long for their successful examination, I could not, on reflecting on these blessings received from the Divine Majesty, but endeavour to rear some memorial, however insignificant, of a grateful heart. This I thought I could in part accomplish, if I should leave to posterity the result of what had cost me much labour and expense during my whole life. As I have ever been a determined enemy to idleness, and as I have applied myself to these hidden subjects by day and by night, without much regard to health, and without caring for the colds of dreary winter, or the heats of burning summer, grudging not the most painful labour, as well as my whole and almost undivided time, I have committed my observations to writing, not only on the subject of Natural History, but also on Philosophy and Medicine, and in a way that can scarcely fail to be useful to Philosophers and Phy-

sicians, and generally to learned men. Among these subjects I judge that the first place in the publication should be given to that which treats of animals, as being a nobler subject than the others. For as Plato reckons four great divisions of animals, corresponding to the four elements, earth, water, air, and fire, I think it expedient, upon due reflection, to begin with birds, that division seeming to offer itself first in order; for as to those corresponding to fire, I consider that none such exist. Although certain insects fall under the aerial division, some with conspicuous wings, like the bee, and others with concealed, as the beetle, the order of procedure may well be assigned to birds, which fly with regular and not with membranaceous wings. This subject of ornithology is, indeed, an arduous one, whose very difficulty provokes investigation; for here an aspiring mind may try its strength, and if it succeed, the triumph is neither low nor grovelling, but splendid and honourable; and should failure ensue, the very attempt is noble and commendable. Some perhaps will inquire why I have not commenced with quadrupeds, as this division might seem to claim the first place, as they assist man in his labours, and chiefly supply him with food. My reasons I shall declare on a future occasion, I trust to the satisfaction of the reader. Quadrupeds then will occupy the second place. The third I intend to assign to fishes, the offspring and flocks of the water, including the inhabitants of the wide ocean, along with those which attach

themselves to the rocks, and frequent the shore, and those which are found in rivers, lakes, and ponds. The fourth and last will include the white blooded animals, both those which are serviceable to man, and those which are not. Here I will include many minute animals which were unknown to the ancients, as they are generally at the present day. After this we shall explore the rich fields of the vegetable world, and those of fossils. I may add, that many things will be found in this work, relating to man's life, both public and private, and to the proper establishment and regulation of manners; also remarks of a highly useful character on ethics, on rural and domestic economy, upon politics, and military affairs—remarks which have been gleaned from the ancient monuments of literature. There will also occur many directions for the preservation of health, some of a general nature, and others more especially professional. The linguist, too, will here be supplied with numerous synonyms in almost every known language." *

Here, then, is a plan, remarkable for its comprehensiveness, and, what is not less astonishing, it was accomplished to the very letter, and in a way that will remain a lasting monument of the author's genius. But a few particulars must be added.

As our author has informed us, he gave the precedence to Ornithology, and the first edition of his work on this subject, published at Bologna, extends

* *Opera, tom. i. in Praefat.*

to upwards of 2600 folio pages, of the largest size, beautifully executed, adorned with some elegant engravings, and with almost innumerable wood cuts, all of them creditable, and many of them of superior merit. It is concerning this work that Haller remarks, "he devoted himself most assiduously to anatomical details."

The first volume appeared in the year 1599, when the author had attained the venerable age of 77. We have room for nothing more than the shortest epitome of its contents, which we give chiefly as a sample of the whole work. And, first, let us again hear the author: "I could wish you to judge how much toil and trouble has been given to this work. I have supplied the names of birds not only in Greek and Latin, but also in Hebrew, Arabic, and Italian, and, in short, in all known languages. I have described the birds, and figured those I have had an opportunity of drawing. I have illustrated their nature and habits, have dwelt upon their food, the manner in which they are captured, and how they may be best preserved; likewise the nourishment they afford, their use in medicine, their employment upon emblems, symbols, and images, in sacred and profane mythology, and on coins, in proverbs, and hieroglyphics. Whatever can be usefully said upon birds may be found here."* The treatise is divided into twelve books. The author begins with the rapacious birds, and after a short introduction, he

* *Opera, t. i. Dedicat.*

treats of eagles, vultures, hawks, falcons, nocturnal rapacious birds, such as owls, &c. then such as are of a somewhat mixed nature, in which chapter he discusses Bats, and the Ostrich, then Fabulous birds, afterwards Parrots, Ravens, Crows, &c. With regard to the anatomical details, he in this volume, according to Haller, describes the breast and collar-bones of the Eagles, and their whole bony and muscular frame, the Nictitant membrane, and the first rudiments of the pupillary membrane; also the bill of the Parrot, the upper part of which is moveable, and possesses its appropriate muscles; also the tongue of the Magpie, &c. The second volume appeared during the ensuing year, 1600. It is of equal dimensions, and not inferior merit. Among other things, this volume also contains many anatomical details; there is described the process of incubation of the egg, for each day, the *punctum saliens* having been seen on the third day, and the *truncus venosus* arising from it: there is here, too, the skeleton of the Starling, the windpipe of the Lapwing, &c. &c. As a sort of preface to this volume, there is a notice from our author's friend and successor Uterverus, in which he mentions that the former volume has been very flatteringly received; and he adds, "Aldrovandi will, in his own time, augment the public gratification by presenting them with the drawings, illustrations, and history of a great number of plants, known as yet to few, as well as of the white blooded animals, of fishes, quadrupeds, and also of inanimate things." We

quote this chiefly because it seems to show that circumstances had arisen which might lead to an order of publication somewhat different from that which had been originally intended.

If Haller and Baron Cuvier be correct, the next volume which appeared was not the third and last on Birds, published in 1603, but that on Insects, which appeared the previous year, viz. 1602. This would show, that probably different volumes were in preparation at the same time; although, from not being able to see the first edition, we have not confirmed the statement. From this volume we extract the following sentiments:—"Of all the departments of Natural Philosophy, the knowledge of which is difficult, the study laborious, and the nature abstruse, that which I have found the most difficult relates to insects. Their extreme minuteness would lead us more appropriately to designate them *ἀτομα* than *εὐτομα*, *atoms rather than insects*. And for this reason no one, so far as I know, has published any thing concerning them that is worthy of notice. Aristotle is the only one among the Greeks who has left any thing of value, and though Pliny has collected a few things from others, yet they are so garbled that they are likely only to confuse. I trust, on the other hand, that this book of mine will afford both pleasure and profit: pleasure, that in such minute animals we can observe such wondrous tints, such perfect forms, manifesting extraordinary power, and other qualities worthy of all admiration. With regard to the colouring, such

variety exists that Apelles himself would be unable to rival them; in mental and bodily powers, again, we find that the smallest gnat in Mesopotamia will sometimes vanquish the mighty lion, and an insignificant beetle will make the queen of birds (the eagle) to quail. The bees also, and the ants, to omit many others, surpass other creatures, and even man himself, in art and foresight. From such contemplations we may reap instruction as well as interest. Besides, how many are the luxuries and the remedies which we derive from this source: there is wax and honey from the bee, and silk from the caterpillar, and other things from others. *Ab aliis aliaque.*"*

The volume on Serpents likewise appeared in the year 1602. The third volume on Birds seems to have been the last the author lived to publish. It treats of aquatic birds, as of the Swan and Heron, of the lower larynx of the starry Cormorant, &c. &c. The year immediately after his death another very important volume appeared, on what is called white blooded animals, viz. the Mollusca, Crustacea, Testacea, and Zoophytes, 1606; which contains much original matter, as well as exhibits the knowledge of the ancients in this obscure department.

These six volumes, then, appear to have been entirely prepared for the press under the superintendence of Aldrovandi himself: the remaining seven of his "Opera," making thirteen in all, appeared

* *Opera, t. iv. Ad Lectorum.*

subsequently at different times, under the direction of his colleagues and pupils, and, seemingly, in the following order. The volume on Fishes, including the amphibious Mammalia, the Manatee of the West Indies, and the Sea-cat or Phoca, all of which we have engraved, in the year 1612; the volume on Bisulcated Quadrupeds, those which divide the hoof, in 1613; and the two remaining volumes on Quadrupeds, the former confined to solipeds, those with undivided hoof, in 1616. A huge volume on Monsters seems not to have been published till the year 1642. Respecting this volume Haller remarks: "It contains several matters of importance. There is the anatomy of the pike, with a description of the swimming bladder, the liver, and parts of generation; also of the carp with its double air bladder; also of the teeth of the porcupine, and its cœca; also the skeleton of the sow, along with an immense collection and farrago of monsters, with numerous fables attached to them, with some things of real value."* The volume on Fossils, one of the largest of the whole, followed; and, finally, the Dendrology appeared as late as 1668. With a short notice of this volume, by a contemporary critic, we must close our remarks on the contents and character of these ponderous tomes. "There is scarcely any thing written about these trees which has not been collected in this volume; for the author is not satisfied with mentioning all that he had met in Na-

* Bibliot. u. a.

turalists concerning them, but also relates what historians have written, legislators have ordained, and poets have feigned, respecting them. Moreover, he explains their different uses, for economical purposes, in Physic, Agriculture, and the Arts ; lastly, he notices the moral sayings, proverbs, devices, enigmas, hieroglyphics, and most other things which relate to the subject.”*

We cannot finally, however, leave these *Opera*—“this memorial of a grateful heart”—without attempting to vindicate and defend our Naturalist’s fair fame, as to the claims of authorship. The originator of the unjust charge brought against him on this point seems to have been the learned Abbé Gallois, whom we have just quoted. His critique of the “*Dendrologiæ*” begins with these words—“Aldrovandi is not the author of this book, nor of many others which are published under his name”—alluding especially to the last seven volumes which have passed under our notice. The cautious Bayle has allowed himself to be misled by this flippant statement:—“This compilation,” he remarks, referring to the *Opera*, “comprehends several large volumes ; but the whole honour must not be ascribed to Aldrovandi ;” and, in proof, he quotes the passage just produced. Among later writers, therefore, we are not to wonder if we find it is the prevailing notion that Aldrovandi, we will not say is not the author of these works, but only

* *Journal des Scèvans*, 1658.

that he had a divided and inconsiderable share in their preparation and merit. We believe this criticism is substantially unjust, and wholly untrue. The Abbé thus explains himself—“As the first six volumes were Aldrovandi’s, although the others were compiled by various authors after his death, yet they are ascribed to him, *either* because they are continuations of his design, *or* compiled from his memoirs, *or* written according to his plan, *or, perhaps*, with a view of recommending the latter volumes by so famous a name.” But this is all uncertainty and mere conjecture,—the vague and hasty suggestions of one whose very expressions demonstrate a total ignorance of the actual state of the facts.

Aldrovandi early sketched the plan of his “Memorial.” He was fifty years in executing it. In his first published prospectus, so to speak, he imagined the treatise on Quadrupeds would precede that on Fishes; to which would succeed the Mollusca, Crustacea, &c. Botany, and Fossils. As early, however, as the year 1600, a change in the order of publication was anticipated, and it was announced to the public as follows—Plants, Mollusca, Fishes, Quadrupeds, and Fossils. This order, we have seen, was nearly followed; with one striking exception, however, viz. as to the Plants, which was the last that appeared. But it is of this work on Plants, which it was anticipated would have taken the precedence of others published during the author’s life, that the critic ventures to declare

that it is not Aldrovandi's, and speaks of Ovid. Montalbani as the true author.—“Cet auteur ne se content pas de rapporter tout ce qu' il en a lu,” &c. Why, the subject of Botany was that on which our author was more early and more fully prepared than on any other, Botany being the science which he first and for so long taught with the greatest success in the University. The simple statement of these facts refutes the injurious aspersion, and we deem that nothing more, therefore, need be said regarding it. We think it highly probable that the whole matter of the volume, in Aldrovandi's manuscript, would be found at Bologna at the present time.

In addition to the treatises contained in the thirteen folios we have thus noticed, and the other works we had occasion to mention, we have observed that a few other treatises proceeded from the pen of Aldrovandi. Some of these are named by Haller ; and Miræus states, upon the authority of Paulus Mut. (sic,) that he prepared a work for the press, “Upon the Providence of God, as it may be learned from Animals ;” in short, a work on Natural Theology. We do not know whether this treatise ever saw the light. We ought also to mention, that second editions of his *Opera* were speedily required, showing their great popularity, and were published at Francfort, as well as Bologna, with much elegance and care. It is now difficult to procure a uniform edition of his works, and some of them are much scarcer than others.

We have thus seen, then, that Aldrovandi, born and reared in affluence, possessed of superior abilities, and with the avenues of professional independence before him, was induced, by the bent of his genius, to desert the path of worldly gain, and to dedicate the whole of his fortune, and of his life, to the advancement of a favourite and ennobling study. His means were ere long exhausted, and though it was an element in his calculation, that the profits of one publication would enable him to put forth another, yet in this he proved to be so much mistaken, that he was actually reduced to pecuniary straits and difficulties. He could not, accordingly, proceed with the publication of his own works; nor is this to be wondered at, when we consider their extent. They are really as ponderous as our great modern Encyclopædias. But although he could not bring them before public notice, others, embued with that spirit which he had infused, were both willing and able to do so; and they completed their master's design with a zeal that does honour at once to their friendship and their love for science.

It will not be forgotten that the reading population on Natural History, as on other subjects, was very different in the sixteenth century from what it is in the nineteenth. Hence the real importance of patronage then; and without its help much could not have been effected, which was actually accomplished. But we may hear our venerable Professor himself. “As water to a tree, so is patronage to works of merit. Thus Pliny was indebted to the

patronage of Vespasian, Appian to that of Antoninus, and Aristotle's Commentaries, above all praise, would never have seen the light, had not Alexander the Great exercised his imperial influence, both in their preparation and publication. So is it with thousands of books of the present day. Salviani, formerly my intimate friend, dedicated his work on Fishes to Pope Paul IV. Mathiolus, too, with whom I have had much literary intercourse, dedicated his to the Emperor Maximilian II., and Belon, his treatise on Fishes, to Henri II." With this truth clear before him, our author declined not any assistance which was offered, and gratefully acknowledged his obligation. The first volume of his works accordingly was dedicated to Pope Clement VIII., who distinguished men of merit "with the very hand of Mæcenas." It may help to show the elegance with which our author's works were prepared, if we allude to the excellent engraving which forms the title-page. On a tablet on the left is represented the Great Alexander, accompanied with his guards, listening to the aged Stagyrite, and encouraging him to proceed with his immortal work. On the right is the Emperor Vespasian, with the Imperial Eagle and Lictors, doing a similar office for the elder Pliny; and in the centre is our octogenarian, bending at the foot of the Pope, and presenting his massive tome to the aged Clement, surrounded by the Cardinals, in the midst of the imperial city. The second volume, in like manner, is dedicated to Cardinal Montalto, and we are here supplied with

the following information:—"When I had brought myself into difficulties, and was on that account led to employ my patrons, as means of invoking your clemency, you not only assisted me, but conferred benefits of a nature that exceeded my highest expectation, and for which I can never be sufficiently grateful."* In the year 1600, our author gives us the following additional intelligence:—"Pope Sixtus VI., that lover of the good and learned, deigned to place me in the class of literary men, and showed great liberality by increasing my comfort; for, learning from others that I was incurring an expense for the general benefit of the studious beyond my means, he, of his own accord, recommended me so strongly to the Senate of Bologna, that I received from them very considerable remuneration—*mediocres fructus.*"

But by far the most interesting witness in these matters is the widow of Aldrovandi, whom we regret we have not the means of introducing more intimately to the reader's acquaintance. In her dedication of the sixth volume of the *Opera* to the Senate of Bologna, she says:—"Among the illustrious men who have been distinguished by the study of Philosophy and other branches of learning, I allude to no other than Ulysses Aldrovandi your countryman, my husband, who did not occupy the lowest place amongst them, for almost fifty years, and upon whose excellent character, and extensive erudition, I should dwell, were it not well known to you, not

* *Opera*, t. ii. Dedic. sub. fin.

more by the declared opinions of others, than by his own writings. From the earliest period of life he so delighted in learning, that he spared neither labour nor expense to reach that elevation in which we have all beheld him. Nor did you refuse the reward due to his merit; nay, it is owing to your liberality that he could apply so assiduously to those studies to which his taste led him. It was by your assistance he was enabled to collect, from various quarters, so many observations on plants, animals, and atmospherical phenomena, and to procure so many paintings, sculptures, books, and other records, which are in his library. All these he determined should be your property, for he knew that thus was the best prospect afforded of preserving them from the injuries of time. My husband placed all in your hands, not only that they might be preserved for the public benefit, but because he considered them as your property, even when he lived. For as his own means were found quite inadequate, you distinguished him above other citizens by every mark of favour, respect, and support, (*suppetiis;*) so that he seemed to owe you even more than he left. Having passed, however, his whole life in severe labour, under the shade of the Muses, or, rather, from his cradle, under your wings, he offered you his all—the fruit of his learning and industry, and consigned it to your care—the protectors of his country." Nor was this all that was done by the Senate. This august assem-

bly employed various eminent men to superintend the publication of his manuscripts. The names of Utterverus and Montalbani we have already mentioned; and Dempster, a Scotsman, and Ambrosinus, completed the vast undertaking. These illustrious Naturalists were liberally rewarded, and the whole expenses were defrayed from the public treasury; so proud was his country of her illustrious son.

And notwithstanding all, this is the dying pauper, miserably neglected, in the Public Hospital! We cannot believe it. We see no evidence for it; we see much against it. Sure there is enough of real tragedy in life to spare the necessity of our seeking it in the fictitious and the untrue. Our author was poor! but it was the voluntary poverty of a man who knew no other use of money than to supply the immediate exigencies of himself, and those dependant on him; who spent it faster than he could procure it, though it was for a noble end. He was poor, as it regarded this world's pelf; but he was rich—in the conviction that he had not lived and laboured for nought—in the interest he preserved in the productions of his hand and his head—in the admiration of the wise and the good of his own and of succeeding days. To his poverty was added blindness. Nor can we wonder, when we think of his great age and industry, “ by night and by day, during summer and winter.” From what we have seen, however, he would probably be

the last to repine at this dispensation ; and upon the whole, we cannot but esteem and venerate him ; indulging the hope that with his eye closed as to this world, he would elevate his inward vision from what had been his *summum bonum* on earth, to a higher and a better—from Nature's work to Nature's God ; and surrounded by the cares, and kindnesses, and assiduities of a loving wife, of attached friends, and of an admiring country, would at least breathe his last in comfort and in peace.

In conclusion, we would remark, that in this slight sketch we have had no intention of presenting a mere *elogie*, although, from not entering into the details of our author's works, we have had more occasion to admire and commend than to criticise and blame. Undoubtedly, in our science, the labours of the learned were very different in the year 1538 from what they are in the year 1838. Much, very much, may accordingly be found in the writings of Aldrovandi which is now obsolete ; and much which may be regarded as neither necessarily nor legitimately connected with the subject. Yet allowing all this, there is still a vast store of curious, accurate, and valuable information, and the Naturalist who would know the opinions of the ancients, and the origin of many modern ideas concerning his favourite science, will experience that he cannot refer to these volumes without finding much both of pleasure and of profit.

Aldrovandi's praises have been celebrated by

Barberini, afterwards Pope Urban VIII., in the following epigram:—

The various forms that swim the watery plains,
Whate'er the earth's capacious womb contains,
The trees and herbs that on her face appear,
And all the winged inhabitants of air,
In thy stupendous work collected lie,
To feast the soul, and strike the astonished eye.
Her own productions industry no more
Dares own, but wonders at the fruit she bore,
And faithful nature at thy deeds amazed,
Wishes her own those works thy art has raised.

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